

THE IRON AGE

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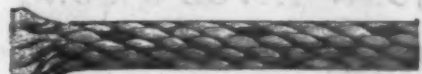


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Page 27.



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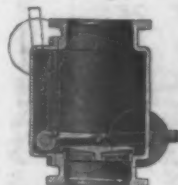
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THE IRON AGE

THURSDAY, SEPTEMBER 1, 1904.

The Plant of the International Harvester Company at Hamilton, Ontario. — I.

Aside from the fact that this plant is the largest agricultural implement works on British soil, the International Harvester Company's works at Hamilton, Ontario, have special interest because of the many new features that enter into their design, construction and equipment.

About ten years ago the Deering Harvester Company

of Deering, McCormick and Champion machines for export as well as for the Canadian trade, the lower import duty on raw iron and steel into Canada than into the United States offering an inducement to make the Hamilton plant headquarters for the manufacture of machines for export to Australia, the British Isles and the Continent.

The plant as now laid out and practically completed consists of a series of buildings designed to produce Deering machines from start to finish, but patterns and machinery are duplicated so as to permit of the man-



Fig. 1.—General View of Interior of the Malleable Iron Foundry.

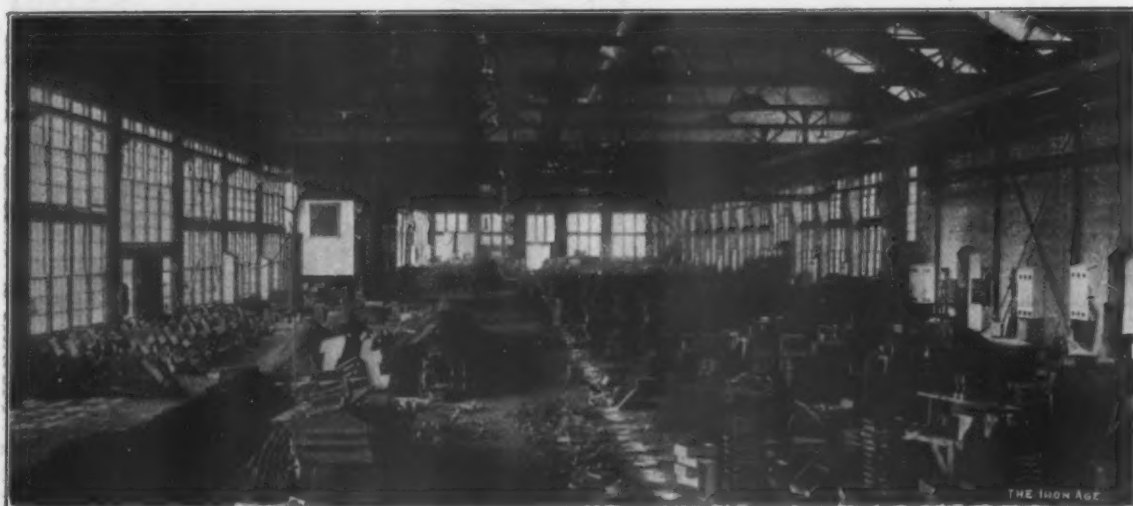


Fig. 2.—General View of Interior of the Gray Iron Foundry.

established a selling warehouse at London, Ontario, and began pushing vigorously for Canadian trade. This trade grew so rapidly, in spite of the high import duty charged by the Canadian Government on American built machines, that in a few years the Canadian business of that company had assumed large proportions. In order to cater to this Canadian trade, and particularly to the rapidly growing trade in the British Northwest, the Deering Company two years ago bought land at Hamilton, Ontario, and began the building of a complete plant for the construction of their machines. Shortly after building operations had begun the Deering Harvester Company was absorbed by the International Harvester Company, and it was then decided to make the plant at Hamilton larger than at first proposed, and to use it for the manufacture

of McCormick and Champion machines in the same buildings. Duplication of the plant is provided for in the proportionment and arrangement of buildings.

The present plant occupies one end of a 125-acre tract lying about 2 miles east of the city of Hamilton, on the banks of Hamilton Bay, a part of Lake Ontario. It comprises the following buildings, which are now completed: Gray iron foundry, 84 x 66 feet, one story high, with annexes devoted to sand sheds, coke sheds and core room; malleable iron foundry, 84 x 880 feet, one story in height, with finishing department, 84 x 80 feet, at one end, three stories high; forge shop, 84 x 702 feet, one story high; an erecting and assembling room, which the company terms its main factory, 72 x 353 feet, two stories and basement; knife and bar building, 78 x 121 feet, four

stories and basement; wood shop, 450 feet long, a portion of which is 72 feet wide, and the balance 100 feet wide, all one story in height; paint shop, 72 x 178 feet, four stories and basement; transformer house, 22 x 43 feet, one story; malleable foundry core room, 61 x 83 feet, one story high; gray iron core room, 35 x 150 feet, one story high; pumping station and boiler house, 41 x 119 feet; storage warehouse, 120 x 400 feet, four stories and basement; office building, 25 x 40 feet, two stories and basement.

These buildings are all of mill or factory construction, except the paint shop, which is a steel and concrete fire resistant building. Their fire protection devices were installed following the plans of the Manufacturers' Mutual Fire Insurance Company, and the whole plant is looked upon by that company as embodying the latest and best ideas for fire protection.

Buildings are equipped with overhead sprinkling sys-

elves, so that materials move forward as their completion advances to the assembling and shipping departments. In this article we will attempt to trace the progress of the work through its various stages, describing in detail only those processes which are novel. In passing, it will be of interest to the readers to know that ground was broken less than two years ago, and that most of the buildings and their equipments were completed in 12 months from the time they were started.

The Malleable Iron Foundry.

This building extends from west to east, with a coal storage and crushing plant adjoining it to the north. It is shown in plan in Sections A and B, in Fig. 4. These sections have been contracted so as to show only the spaces occupied by the mechanical appliances used. The three furnaces shown in Section B of Fig. 4 are served by an overhead electric crane, which deposits in them the

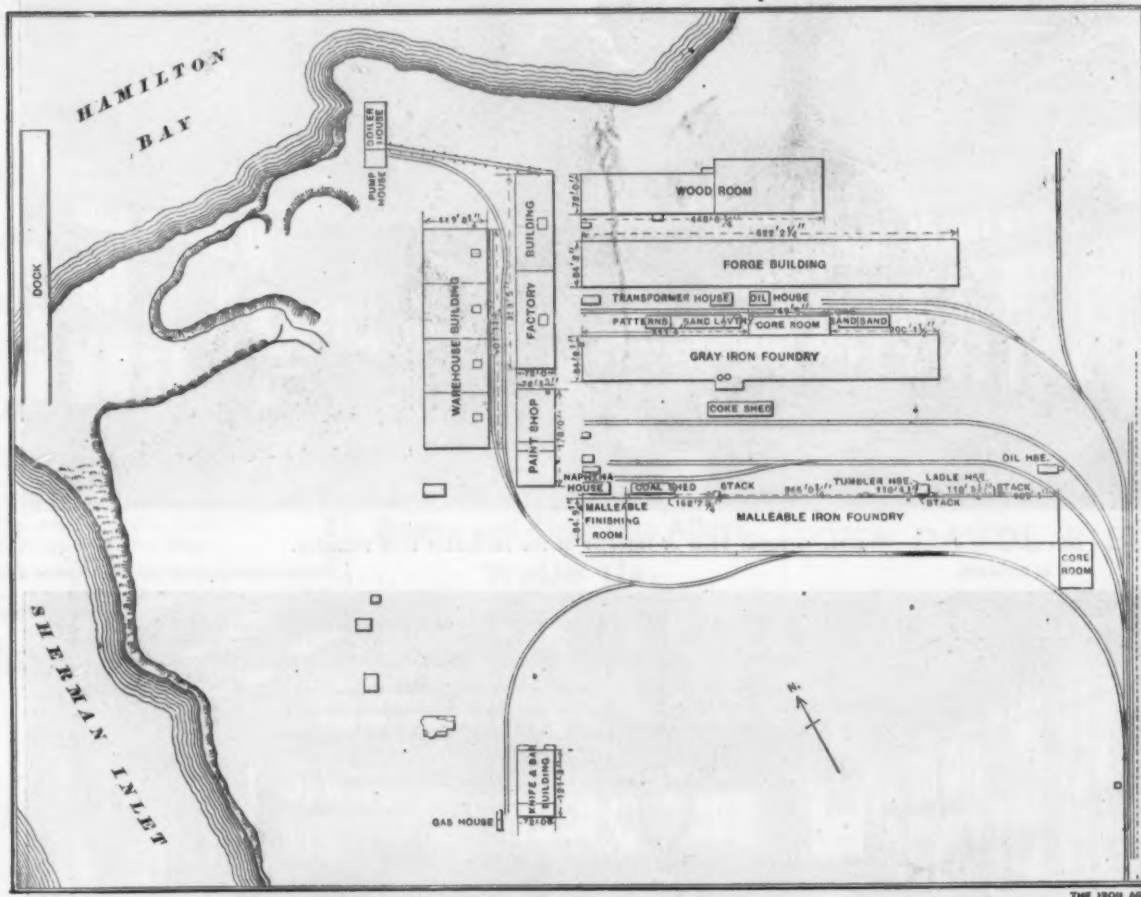


Fig. 3.—Plan Showing the Location of the Buildings.

tems of the wet and dry type. Water for the sprinkler system and private fire hydrants is supplied by a 1500-gallon fire pump. And as a second protection the city water, at its regular pressure, is connected to the mains that run through the plant. Three separate lines of pipes are contained in all the trenches that ramify throughout the grounds—the factory supply, the city supply and the drinking water supply. This triplication of piping was done to prevent confusion and to insure at all times an adequate supply of water.

As will be seen by the ground plan of the plant, Fig. 2, raw materials enter at the eastern ends of the malleable iron, gray iron, forge and wood departments, and move westward through these buildings, emerging at the other end in their finished state, and being carried across bridges to the top story of the factory building, or assembling department, and the paint shop, which buildings lie at right angles to the manufacturing buildings, and from the paint shop and assembling rooms across bridges to the upper story of the warehouse, where the finished product is stored, whence it is carried by means of elevators to the shipping platform. To the minutest detail this system is carried out in the buildings them-

iron. This is done by means of a charging boat, as shown in Fig. 5. The charging boat is swung over the furnaces by the crane, which automatically deposits in the furnace its load of material, a section of the top of the furnace having previously been lifted away by the crane for the purpose. Dumping is accomplished by means of an angle bar secured to the bottom of the boat at the rear, and when this angle bar strikes a lateral bar built over the top of the furnace the boat tips forward and deposits its load. Two tons is a boat load. The charging boat is filled with its contents of sprues and other materials by means of wheelbarrows. In order to minimize the handling, the boat is deposited in a pit in the floor of the foundry, just opposite the furnace, in line with the motion of the traveling crane, so that it can be hoisted from the floor and dumped into the furnace with one motion of the crane.

The stacks which convey away the products of combustion in these melting furnaces are illustrated primarily because of the novelty of their construction, and particularly the method of tying or reinforcing the brick work with iron. As will be seen by the illustration, Fig. 6, a series of angle iron frames are bedded into the brick

work at intervals to strengthen it, and four heavy 1-inch hoops or rods surround the outside of the stack in the upper two-thirds of its height. This reinforcing is done to protect the stacks from disintegration due to the

Making and Handling the Castings.

Molders' stalls are lined against both walls of the building, each being equipped with a molding machine. Pouring is done in the usual way from the furnace into

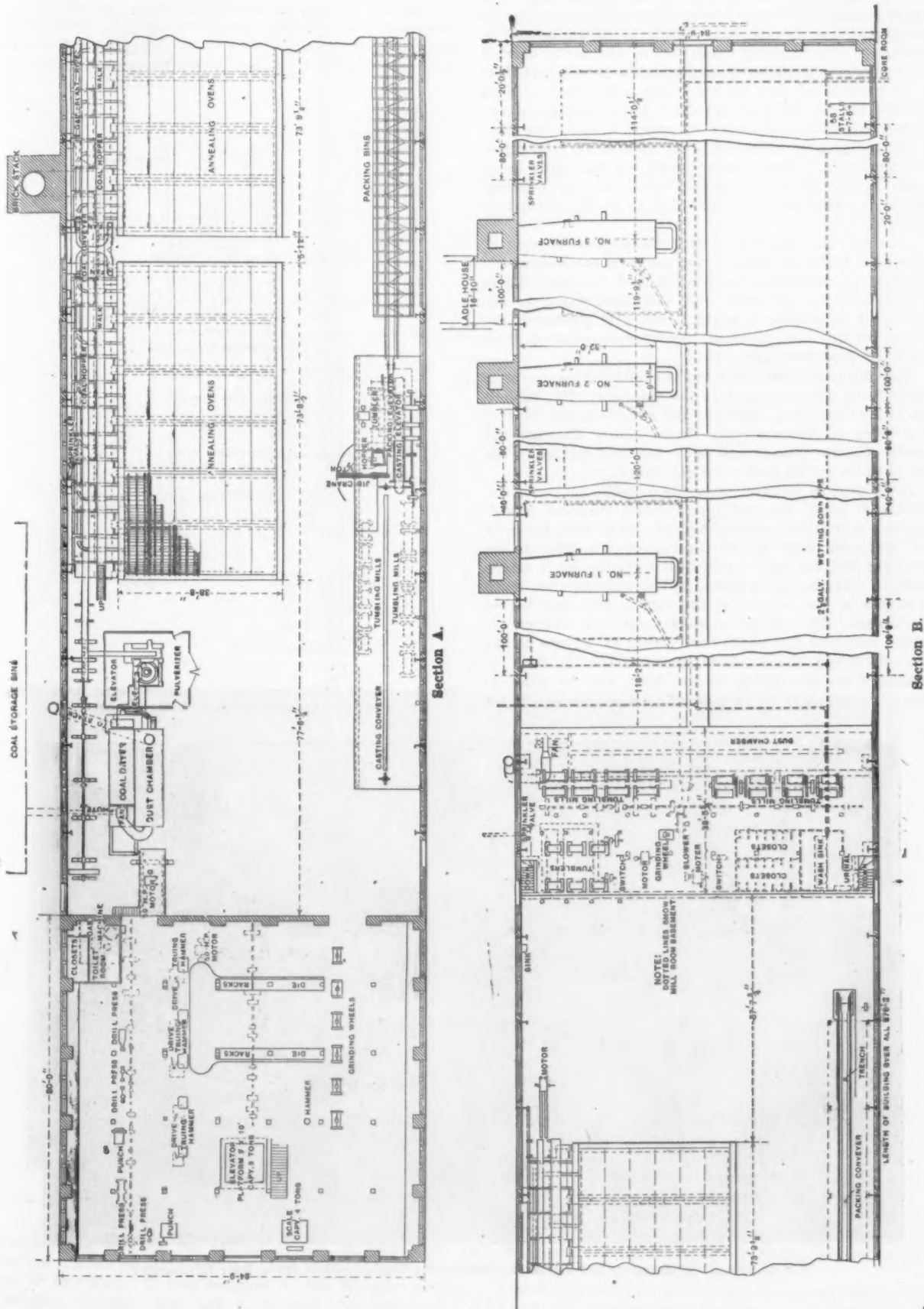


Fig. 4.—Plan of the Malleable Iron Foundry.

thermal changes to which they are subjected. Another interesting feature of this chimney construction is the relieving arches built in the inside of the core of the chimneys. This enables repairs to be made to the inside core without tearing out more than a small section of the same.

the molders' ladle, and thence directly into the molds by hand. When the castings are sufficiently cooled they are picked out of the sand and thrown into the central aisle of the building, where they are placed in large steel baskets, which are conveyed by the overhead traveling crane to the 22 tumbling mills at the center of the build-

ing. On reaching these mills the basket of castings is dumped onto an elevated platform over the mills and conveyed by means of troughs into the tumbling mills themselves. This is what is known as "hard tumbling" operation, because the castings at that stage of their development are hard and brittle. These tumbling mills are of interest particularly because of the method adopted for getting rid of the dust which is so unpleasant a feature of the tumbling operation as ordinarily carried on. One end of these tumbling mills is perforated to allow the inlet of air; the other end is provided with an opening for the outlet of air. This latter opening is connected to a settling chamber, or tunnel, beneath the floor of the building by means of heavy galvanized iron pipes, the connection between these pipes and the mills being made by an adjustable sleeve, which can be removed easily, in order to allow the mills to be dismantled or repaired.

The settling chamber or dust tunnel is connected at its further end to an exhaust fan made by the McEachren Heating & Ventilating Company, of Galt, Canada. These dust tunnels are air tight, and, therefore, when the exhaust fan is started a slight vacuum is produced, the amount of this vacuum being regulated as required to remove the dust from the mill.

The discharge from this fan is connected by means of an ordinary discharge pipe to the outer air. The tunnels are of a large cubical content, and very long, the idea of this being to have the air travel slowly through the length of these tunnels and allow the dust carried in the air to settle to the bottom of the tunnel.

This dust is cleaned from the tunnels at stated intervals, it being shoveled into suitably designed wheelbarrows and lifted out through air tight trap doors by the overhead crane before mentioned. In order to remove the last fine particles of dust from the air, a screen made of suitable heavy cloth, and having an area much in excess of the suction of the fan, is stretched across the tunnel. This screen zigzags across the end of the tunnel near the fan itself, thus acting as a sieve to the moving current of air. It is stretched taut on rods extending from the ceiling to the floor, and in order to clean the screen from its load of dust a man enters the

after having put it into violent motion. With the system in vogue at the harvester plant it is only necessary to pass a sufficient current of air through the tumblers to pull the dust out of them into the flue below. In

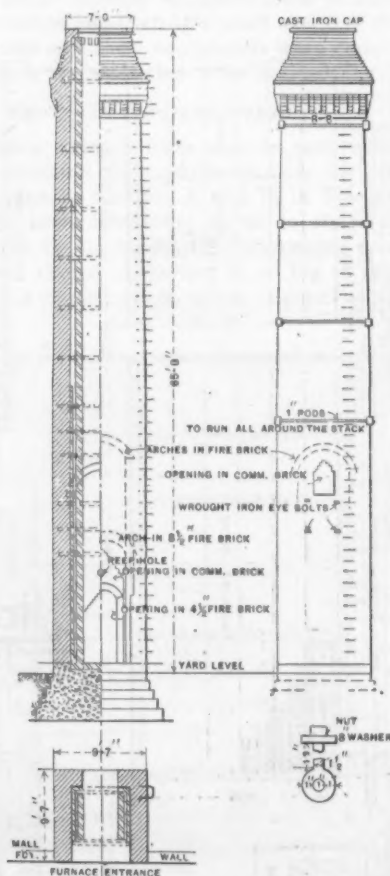


Fig. 6.—Details of Construction of the Iron Bound Brick Stack Employed in Connection with the Furnaces.



Fig. 5.—One of the Reverberatory Furnaces, Showing the Tipping of the Sprue Boat in Charging.

tunnel twice a day and raps on the steel bars with a mallet, shaking the dust from the screen.

The novelty of the principle of the whole exhaust system lies in the use of large settling chambers close to the tumbling barrels, in order to avoid the necessity of having air at high speed pass through the tumbling barrels, as systems of this kind always encounter great difficulty in getting the dust laden air settled

the old systems it was necessary to exhaust the dust from the tumbling barrels through a large suction pipe, then through the fan, and from that discharge it into a cyclone on the roof. The result was a continuous shower of dust descending on the plant and its surroundings.

The same dust collecting system is also installed in the gray iron foundry.

After the castings have been given this first tumbling

operation they are sorted and then conveyed by means of push carts to the annealing department, where they are packed in pots and annealed.

Annealing the Castings.

As the process of annealing castings by means of a flame from the combustion of powdered coal is somewhat novel we describe this process in detail, including the handling, storage, crushing and pulverizing of the coal.

shoveled directly into chutes leading to the bucket conveyor.

The building contains two bins, one above the other, the upper bin emptying into or through the lower and the lower emptying into the V-bucket conveyor. At one end of the pent house on top of the elevator is a 20-ton storage bin. This bin receives its supply of coal either direct from the car or from the main bins, the passage

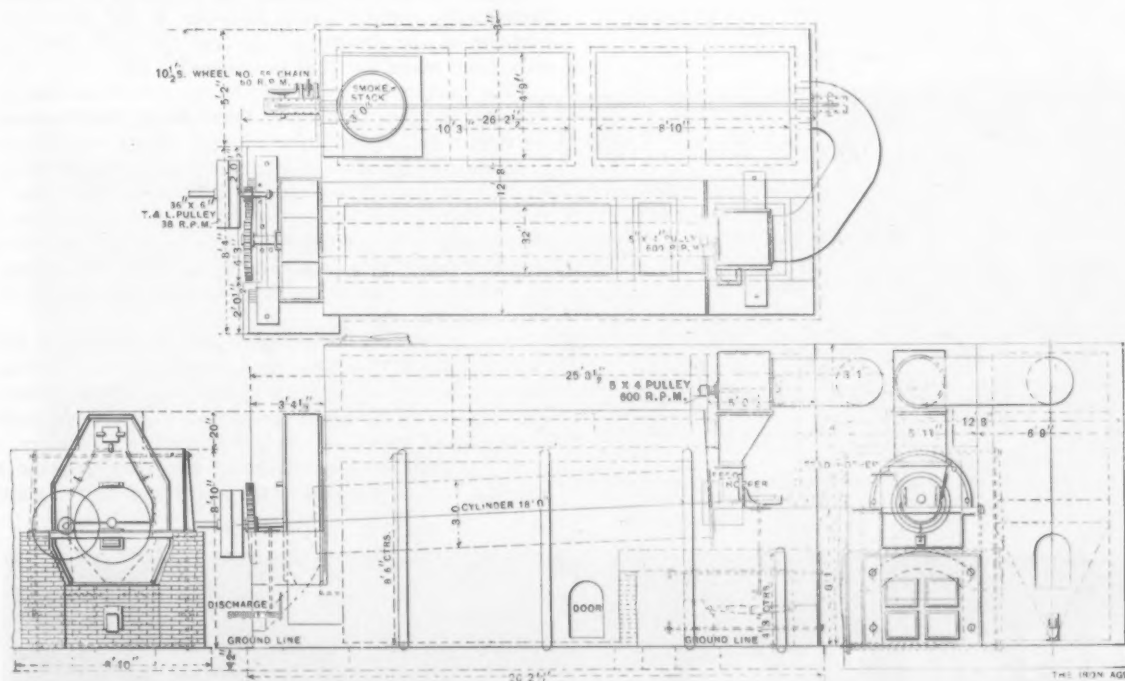


Fig. 7.—Plan and Elevations of the Coal Dryer.

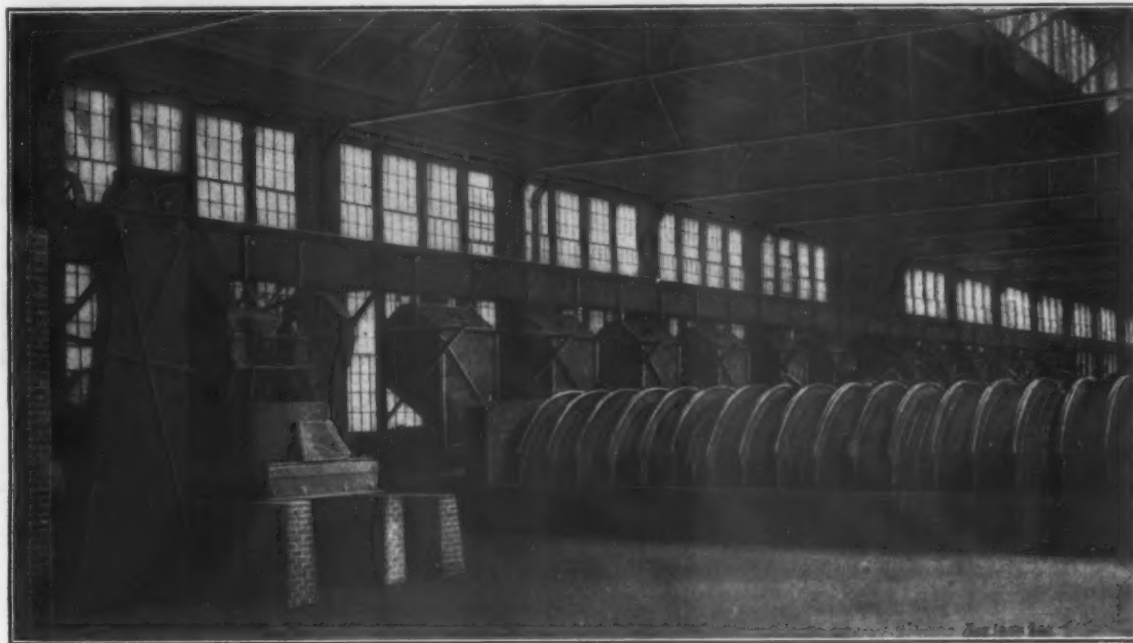


Fig. 8.—The Coal Pulverizer and System for Feeding the Annealing Furnaces.

The building used for the storage of coal somewhat resembles a grain elevator, and is 80 feet long, 18 feet wide and 68 feet high. It was designed by the Webster Mfg. Company, Chicago, and has a capacity for 600 tons. A continuous V-bucket conveyor travels beneath the hoppers of this building up to the top, across the top past the coal storage bins and down the other side. A switch track adjoins the building, and coal is taken into the building in one of two ways: If the coal arrives in a hopper car it is dumped through a grating into a pit, whence it is conveyed to the bins by Webster apron conveyor, which dumps it into the continuous V-bucket conveyor, but if the coal arrives in an ordinary coal car it is

of the coal into either receptacle being controlled by means of automatic gates in the trough.

The storage bin lies several feet above an Aultman 30 x 18 inch coal crusher, and from it coal is conveyed automatically into the coal crusher, the supply of coal being controlled in proportion to the speed of the crusher.

The crushed coal descends from the crusher by gravity through a trough to a single cylinder, direct heat, rotary dryer, built by the C. O. Bartlett & Snow Company of Cleveland, Ohio, and shown in Fig. 7. This dryer is so constructed that the products of combustion can be made to pass through the materials to be dried, or by changing a damper, can be made to pass on the outside only and

and the bull ring. The mill is supplied with an automatic feed, so that if the feed hopper is kept full the mill requires practically no attention.

The central shaft is supported on a step bearing underneath the mill, which is supplied with an adjusting screw that enables the operator to raise or lower at will the central shaft which carries the spider and the rolls, in order to keep the rollers even with the top of the bull ring.

The spider is keyed onto the central upright shaft, and when the power is applied to the countershaft the beveled gears set the central shaft revolving, which, of course, revolves the spider and the rolls pivoted onto the spider after the fashion of a set of governor pulleys on

tened the plows to a journal shaft which runs at a very high speed.

The pulverized coal, after passing through the screen, is collected in sheet iron hoppers, which discharge it into a conveyor by means of a number of perforations that all radiate toward the points of discharge into the screw conveyor underneath the floor level.

The automatic feed is easily changed by adjusting the screw in the pitman which slides in a slot or eccentric, so that the pawl and ratchet can be made to feed anywhere from one to seven notches. This is also a valuable feature, as a uniform feed is very important to any grinding mill.

The pulverizer has a capacity of 30 tons per day, and



Fig. 12.—General View of Castings and Packing Conveyors.

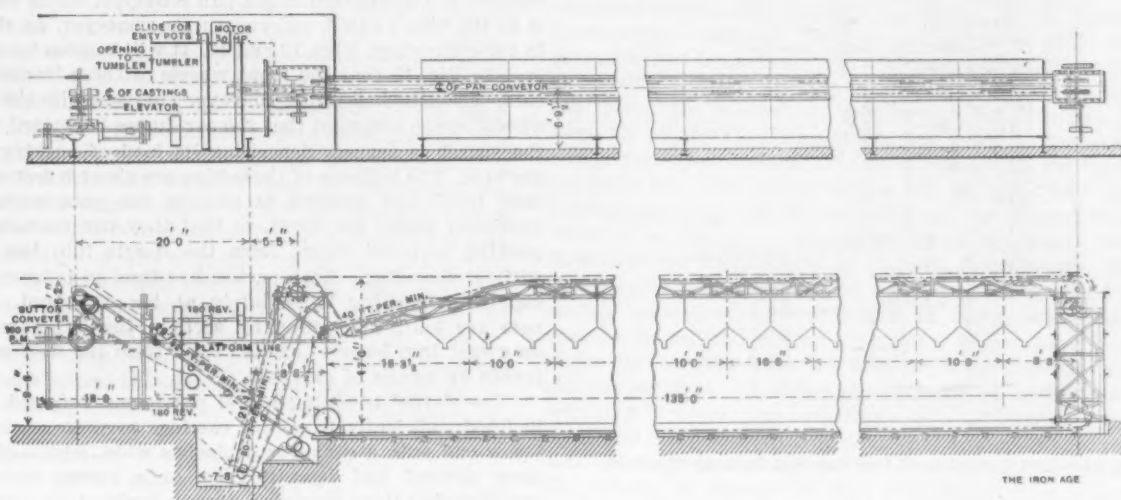


Fig. 13.—Plan and Side Elevation of Castings and Packing Elevators and Conveyors.

any engine. The centrifugal force and the fact that the rollers are pivoted to one side of the center cause a tremendous friction and pressure to be applied at the point of grinding contact between the rollers and the bull ring. The rollers are made of cast iron, chilled. They are made by the New York Car Wheel Company of Buffalo. The bull ring is $2\frac{1}{2}$ inches thick by $6\frac{1}{4}$ inches wide, and is of high carbon steel made by the Midvale Steel Company of Philadelphia.

The coal is delivered to the grinding surface from the hopper by means of a plow set directly in front of the roller in such a manner as to insure the passage of the coal under the roller, and then throwing it up onto the screen surrounding the mill. The plows are fastened to a support which is keyed to the central shaft, so that the plows travel at a comparatively slow speed, which is a novel feature, as most of the mills heretofore have fas-

tened the plows to a journal shaft which runs at a very high speed. The pulverized coal, after passing through the screen, is collected in sheet iron hoppers, which discharge it into a conveyor by means of a number of perforations that all radiate toward the points of discharge into the screw conveyor underneath the floor level. The automatic feed is easily changed by adjusting the screw in the pitman which slides in a slot or eccentric, so that the pawl and ratchet can be made to feed anywhere from one to seven notches. This is also a valuable feature, as a uniform feed is very important to any grinding mill. The pulverizer has a capacity of 30 tons per day, and

To start the fire, this mixture of air and pulverized

coal is lighted by waste saturated with oil, placed immediately in front of the discharge into the furnace, and the mixture burns with a clear blue flame somewhat resembling a gas flame.

The ash resulting from this combustion is deposited largely in the furnace itself, and is removed from the same at the end of each heat before the furnace is recharged. This is done by shoveling the ash into suitably designed steel boxes, which are lifted out of the ovens by the traveling crane and deposited in a convenient location to be hauled away. The small part of the ash which is deposited in the flue of the chamber is removed by means of a steam jet inserted at one end of the flue. When the steam is turned into this jet the dust is blown out of the flue. In actual practice it is found that there is practically no ash deposited on the sides of the annealing pots, and the ash which is deposited on the top of these pots is in no way detrimental to the process.

The entire apparatus from the point where the flight conveyor discharges the pulverized coal into the 12 storage bins was designed and erected by the B. F. Sturtevant Company of Hyde Park, Mass.

A. L. Johnson, formerly the superintendent of machinery of the Hamilton plant, and now head of the experimental department, states that the use of coal dust for annealing furnaces not only effects a saving in fuel, but shortens the annealing process by at least 24 hours and gives a higher average quality of casting because of the greater uniformity which can be maintained by means of the coal dust as compared with any other fuel.

Each of the 12 annealing ovens is 35 x 10 feet inside measurements. The top, or roof, of the oven is built up from a series of six sections, or "bungs," each section be-

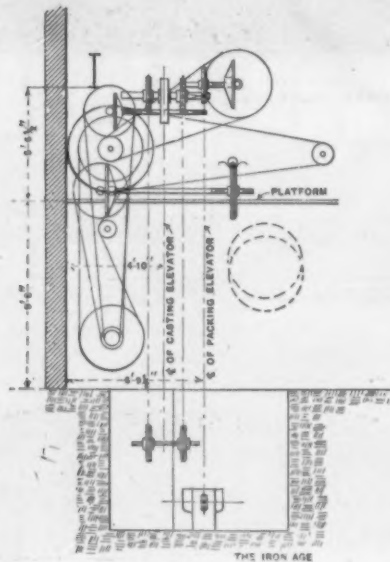


Fig. 14.—End Elevation of Castings and Packing Elevators.

ing built up, as shown in the illustrations, from 9-inch I-beams, curved to a 6-foot radius, as shown in the print. These I-beams carry a stratum of fire brick 9 inches thick on their under side and are tied together transversely by means of bars, riveted at the intersections. Each section, or "bung," has a heavy steel eye at the top, which is engaged by the hook of the crane and is by that means lifted out of place and set over onto an adjoining oven. This removable feature of the oven tops is brought into play both in loading and unloading ovens.

The Conveyor System.

To return to the progress of materials: After the castings to be annealed are cleaned in the tumbling barrels, in the hard milling room previously referred to, they are packed in sectional annealing pots of the ordinary form, this packing being done in front of the storage hoppers, which will be referred to later.

These pots are then lifted in tiers of four by an overhead electric crane, the apparatus used to lift the pots being a grappling hook specially designed, which is swung

underneath the chair on which the pots stand. They are placed by a crane directly in the ovens in the exact position required for the proper annealing. This process simplifies the loading of the ovens, doing away with the charging rams commonly in use.

When the annealing process is complete the bungs are lifted off the top of the furnace and the castings are allowed to cool while they are still in the furnace. When sufficiently cool they are removed by the overhead crane, which places them on a platform at the opposite side of the building, where they are picked up by the jib crane

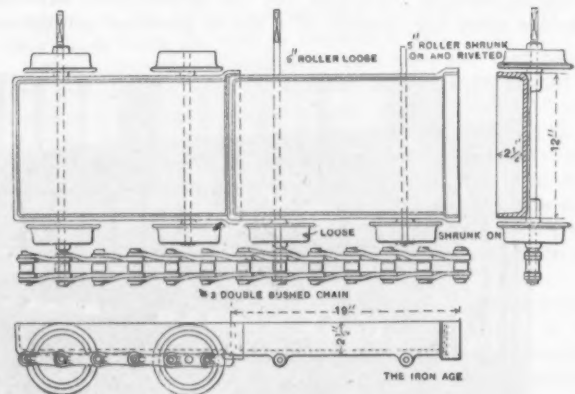


Fig. 15.—Details of Construction of Bucket Conveyor.

which dumps them into a chute, at the foot of which, somewhat above the floor level, is a revolving slatted tumbling barrel, 14 feet long by 30 inches inside diameter.

This mill is built from 3-inch tee iron staves, with crevices between the staves about $\frac{1}{8}$ inch wide, these crevices permitting the packing and dust to rattle out, leaving the castings comparatively clean. The packing falls to an elevator boot below the barrel, whence it is lifted by means of a conveyor with $8 \times 4\frac{1}{2} \times 8\frac{3}{4}$ inch buckets and discharged into a pan conveyor, which carries it to the bins located underneath the conveyor, as shown in the engravings, Figs. 12 and 13. It will be seen by reference to Fig. 15 that the front wheels of these buckets, or cars, are attached to the conveyor chains, while the rear wheels are so arranged that the car dumps backward when the switch is turned, depositing its load of packing into the bins. The bottoms of these bins are about 6 feet above floor level, and molders in packing the pots work immediately under the spout, so that they can cascade the packing material direct from the spouts into the pots without shoveling. Each packer has thus an independent supply of packing immediately at his command. The pots are built up section by section, the latter resting on a cast iron bottom that is raised from the floor a few inches by means of cast feet.

The slatted tumbling barrel previously referred to is inclined sufficiently to permit castings to slide out at the lower end onto a conveyor 26 inches wide, which carries them upward and deposits them on a button conveyor, which pushes them through a trough horizontally over the platform. This trough is made in sections, each alternate section being hinged in such a way that it will drop and permit the castings to fall through onto the platform a few inches below. The hinged sections of the conveyor trough are counterbalanced by means of ropes running over pulleys, a weight being attached to the end of each rope sufficient to bring the hinged section back into place after it has dumped its quota of castings. An operator by pulling on the rope desired controls the distribution of the castings of this conveyor system. After the castings are dropped onto the platform they are pushed through trap doors into tumbling barrels, which are set high enough above the floor to allow the trucks used to transfer castings to finishing room to be run under them. The castings are dumped directly from the mills onto the trucks. In the finishing department they are straightened, machined, ground, &c., and from that department are transferred to the assembling room by means of trucks.

The slatted tumbling barrel and the button conveying

system were constructed by the International Harvester Company in their own plant, while the balance of the installation is that of the Webster Mfg. Company of Chicago.

The main overhead traveling crane, which we have referred to above, was built by the Whiting Foundry Equipment Company of Harvey Ill. It is 800-foot span, three motion, electric, with 10-ton lift and a track speed of 200 to 300 feet per minute.

The Prospects for Ore Discoveries on the Older Ranges.

The paper of Robert S. Rose, read before the Lake Superior Mining Institute August 18, was on the "Geology of Some of the Lands in the Upper Peninsula of Michigan," and was to exploit lands owned by the Michigan Land & Iron Company, an important fee owner of the region. This company's lands are located in the Negaunee, Ishpeming, Michigamme, Crystal Falls and Mansfield formations, in all of which producing mines are now open.

Mr. Rose referred briefly to the geological formation of these several districts, and stated that, so far as previous exploration was concerned, the ground might be considered virgin territory. He said that Champion Mine, for instance, was due more to persistent exploration than to any peculiar geological conditions, and that at any one of a dozen localities in the hard ore belt there might be shown up as good a mine as Champion. The work of the United States Geological Survey has been so thorough on the Marquette range that the maps locate roughly all the lands on which the hard ore formation may be found. Only two mines are working west of Ishpeming—Republic and Champion—and the former owes its existence to peculiar geological conditions, the other to persistent exploration in a regular formation. At many prospects small lenses of clean ores have been found at comparatively shallow depths, but nothing has been done in the way of work to prove their depth and size. As far as present information goes, the limonite ores, in the Michigamme slates, are in a somewhat persistent horizon on a foot of black graphite slates varying in thickness from 300 to 1000 feet. This slate, in turn, lies on the Ishpeming formation, characterized by strong magnetic attraction in places and occasional outcrops of magnetic schist. The limonite ores are supposed to lie in folds of the slates. This ore horizon lies in a line of feeble magnetic attraction, which is sometimes totally obscured by the stronger attraction of the Ishpeming formation. Ores occurring in pitching folds will doubtless continue to great depths, and mines abandoned in the early days as exhausted will be liable to show new lenses if properly explored.

He then referred to the Humboldt-Champion district, in Towns 47 and 48, Range 29, where there are two lines of magnetic attraction, the northerly one through North Phoenix, Pascoe, Hortense, North Champion and Bessie mines; the southerly through Northampton, Marine, Phoenix and Gibson mines. All these are small properties and most are now idle. Bessie Mine, in Section 35-48-29, is working in a deposit of limonite ore that occurs in an eastward pitching fold of the Michigamme slates. The line of magnetic attraction shows that a continuation of this ore body may be expected on the southeast quarter of the section. On the northeast quarter there is a sharp bend in the formation, and a most favorable location for exploration is developed. Several other points that, in Mr. Rose's opinion, should be explored were referred to in his description of this district.

Considering the Michigamme district, a limonite formation, no especial geological feature was to be noted excepting a continuous diorite ridge that runs north of and parallel to the iron formation. These sections, 21, 23, 25, 27, 29, 31, 33 and 35, T. 48, R. 30, are all underlain by the Ishpeming and Negaunee formations, and ore may be expected on any of them. Section 7 is the extreme western end of the lower Marquette rocks, as far as they have been traced by any of the geological surveys, but the iron formation probably extends in a west-northwest direction across the north part of 48-32, southwest part of

49-32 and south part of 49-33, &c. In 48-31, sections 25 to 35 show outcrops of the mica slates and schists of the upper Michigamme, and while very little prospecting has been done on any of them, there is a good chance for ore. The north soft ore formation is well defined west of Michigamme and has been opened at various points, notably at Beaufort and Ohio, now working, and at Imperial, Webster and Titan. The large area of Michigamme slates compressed into many folds south of Lake Michigamme makes many favorable places for exploration.

In L'Anse district the only mine worked is the old Taylor, which shipped about 30,000 tons of non-Bessemer ore, that ran from 55 to 60 iron. A complete analysis of samples recently taken is as follows: Iron, 58.90; phosphorus, 0.219; silica, 6.42; manganese, 0.67; lime, 0.321; magnesia, 0.306, and alumina, 0.83 per cent. The ore body was from 35 to 40 feet wide, and the deepest shaft was only 150 feet. The ore is a mixture of a soft red and blue hematite and limonite. The formation is similar to that of the eastern mines of the black slates, but on account of the frequent occurrence of bunches of soft red hematite it seems to be the connecting link between the Marquette and Crystal Falls ranges, in the upper Huronian slates. Section 9-49-33 is almost entirely underlain by the iron formation, and indications are for at least three parallel folds running completely across the section, and in any one or all of these folds there may be merchantable bodies of ore. The mixed ore, as shown by pits, is about 200 feet wide, and if the fold is a deep one large bodies are almost sure to exist. In the south half of 7 good float is found and the magnetic attraction is excellent. The same may be said of Sections 3, 5, 17 and 19. Considerable exploration is now under way in L'Anse district, near old Taylor.

In Republic district considerable exploration has been done by drills and otherwise. Mr. Rose questions the accuracy of the results of the drill exploration by the Algoma Commercial Company, that at the depth of 2475 feet seemed to cut the bottom of the formation and was in the underlying diorite. He thinks that this hole, which was not tested for verticality, may have been deflected, as were all of the Channing holes, put down in the same region ten years before. If this Clergue was not vertical there is a chance of finding ore in this fold. The Algoma company also did some sinking, but stopped work when a few feet from ore, according to Mr. Rose. The formation has been located in 29-46-30, the magnetic line in the north part of 45-30. In many sections of this formation the magnetic lines are marked, and in some there are old mines and newer prospects. For a good part of the district very little is known as to the geology. By piecing together magnetic observations of several observers a new oval has been made out that embraces the northwest part of 46-31, the southeast part of 47-32, the southwest corner of 47-31, and the northeast part of 46-32. The interior of this oval is high, with no outcrops, and it is impossible to tell without exploration whether the central core is granite or greenstone, but this magnetic line doubtless represents the hard ore formation.

Lands in the Crystal Falls district are near Dunn Mine, where the iron ore formation has been proved up by numerous pits, but no deep work has been done. These lands have a chance of carrying the Mansfield Bessemer formation, and the line of contact between the Hemlock diorite and the Randville dolomite has been accurately laid down. Certain explorations show that the greenstone forms the hanging wall of a jasper chert iron formation that has for a foot the Randville dolomite, and this must be the Mansfield formation, which is very soft, and therefore rarely outcrops.

The ores of Amasa are soft red and brown non-Bessemer hematites. The formation is chert and jasper below a hanging of black pyritiferous slate, with a foot of sometimes magnetic black slate grading down to the Hemlock greenstone. The formation is magnetic, and has been located where quite heavily covered by drift by the United States Survey by means of dial and dip compass. Several lands are recommended for exploration in this district by Mr. Rose.

The chief value of this paper, so far as any but the intending explorer is concerned, is in the light it throws

upon the statement, so often made, that in these older regions, especially on the Marquette range, there is no more room for the discovery of ore, as exploration has been thorough and complete. If the older regions of the Lake district possess so many localities where exploration can be conducted with a fair chance of reward, as Mr. Rose believes and seems to demonstrate in his paper, there is abundant ground for the hope that for many years this region will be the scene of persistent exploration and of the discovery of many mines throughout a wide range. As the consumption of ore increases and the limits of merchantable ores set by furnace men lower, it will widen the demand for new mines, and will permit the exploration of many of these fields where there is now only the hope of reward, and where the ores to be found are probably limonites and lean hematites.

The Reeves Iron Center Wood Rim Pulley.

For certain purposes there are distinct advantages attaching to a pulley having a wooden rim and an iron spider. The iron at the center gives solidity and en-

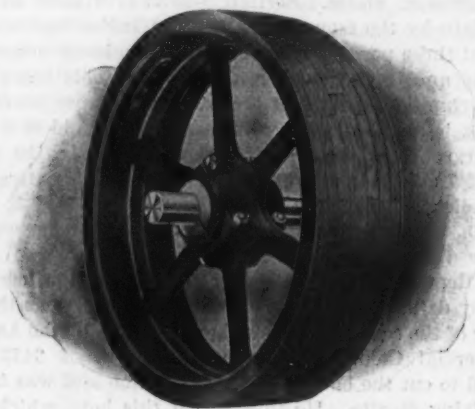


Fig. 1.—Split Pulley with Interchangeable Bushings.

duration, and a wooden rim insures the best belt adhesion. The pulley shown in the illustrations has been designed by the Reeves Pulley Company of Columbus, Ind. It is not intended to replace the Reeves wood split pulley, but to meet the demand of those who contend that the ideal belt pulley is one made with an iron center and a wooden

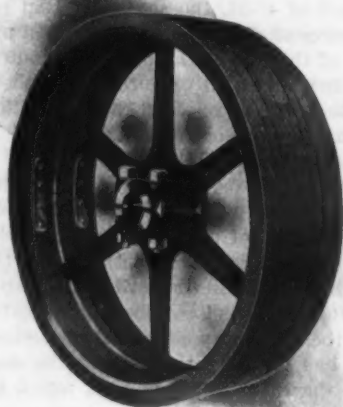


Fig. 2.—Split Pulley Bored to Fit the Shaft.

rim. It is especially adapted to use in textile mills, on dynamos and in high speed service generally, where it is necessary to have the least air disturbance.

The pulley is built in three designs, which are shown in Figs. 1, 2 and 3. Design No. 1 is a split pulley with interchangeable cast iron bushing and compression fas-

tening, and can be made to fit any size of shaft up to and including $3\frac{1}{2}$ inches in diameter. Design No. 2 is also a split pulley, but is bored to fit the shaft, no bushing being used. Design No. 3 is made solid, and is also bored to fit the shaft. The limit of standard bore in pulleys



Fig. 3.—Solid Pulley Bored to Fit the Shaft.

Nos. 2 and 3 is 27-16 inches for pulleys from 12 to 18 inches in diameter, inclusive; 2 15-16 inches for pulleys 20 to 48 inches in diameter, inclusive, and $3\frac{1}{2}$ inches for pulleys 50 to 60 inches in diameter, inclusive.

In all designs the rim is built up of short segments nailed and glued together, the construction being the same as that used in the Reeves wood split pulley. The iron arms are built up with the rim and extend into it where they are held by iron pins to prevent them from working loose. The inside of the rim and all iron parts are finished in machinery black, and the face of the rim in alcohol orange shellac. Extra wide rim pulleys are furnished with two spiders, but are otherwise constructed in the same manner as the single arm pulleys illustrated.

Central American Notes.

SAN ANTONIO, C. A., August, 1904.—Minor Keith, contractor for the Guatamala Northern Railway, now building, has arrived at Guatamala City and reports active work between El Rancho and the eastern terminus, Puerto Barrios, on the Caribbean Sea.

All Central America is quiet. There are not even rumors of any disturbances north of Panama.

At Panama the action of the Canal Strip Government creating two new ports near Colon and Panama City has not met with the approval of the people. They claim that ports of entry are, according to the treaty with the United States, entirely under the jurisdiction of the Panama Government. On the other hand, the abrogation of the monopoly of through traffic from the Atlantic to the Pacific, owned by the Pacific Mail Steamship Company, and now announced ended by order of President Roosevelt, is very gratifying to all Central Americans, who have suffered greatly for many years through that monopoly, which in many ways, it is claimed, has kept back the development of the country at large.

Very little of the damage done by the earthquakes in Quezaltenango and Mazatenango can now be seen. Most of the buildings have been replaced by steel frame structures. Iron and steel are being used on the aqueducts and bridges near the towns, and business has been resumed in nearly all lines as actively as before.

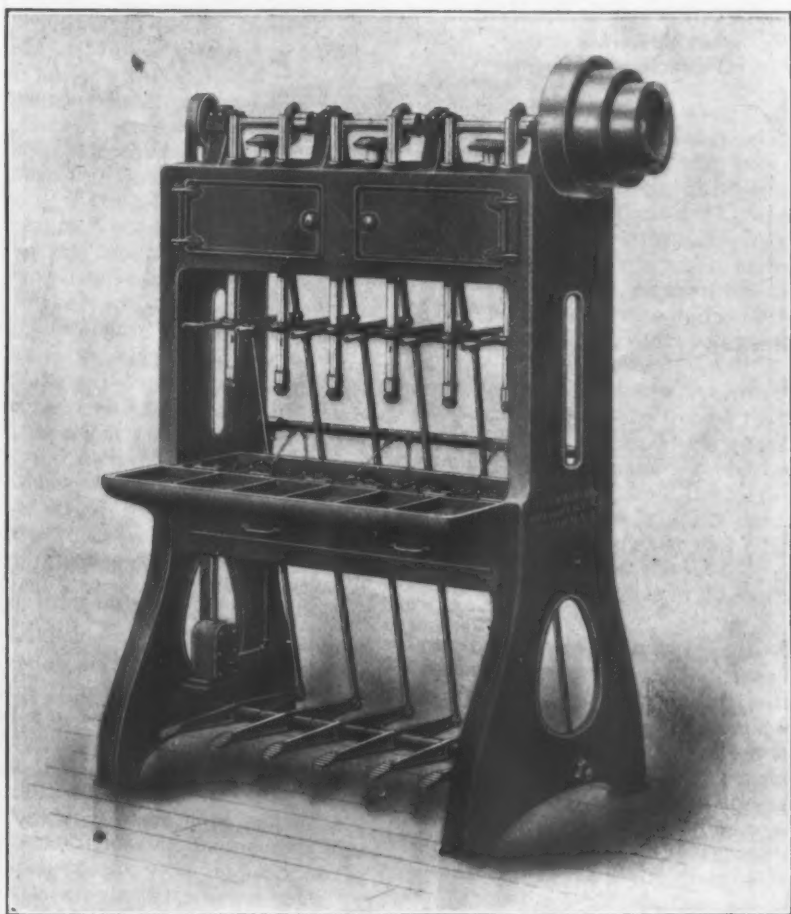
The heavy rains have impeded the work on the Tehuantepec Railroad, now in the hands of the contractors, Weetman, Pearson & Co., nor can much be done till the two ports, Salina Cruz and Coatzacoalcos, are thoroughly cleaned and dredged.

The Costa Rica Railroad to the Pacific is gradually

nearing completion, although much of the heavy grading and mountain work is still to be done. The yellow fever scare at Port Limon is always a drawback to continuous work. Large numbers of Jamaica and West Indian negroes are arriving at Colon and Panama to work on the canal. It is almost exclusively this race which will do the labor on the isthmian waterway, because white men cannot resist the climatic conditions in the lowlands. On the other hand, the highlands are very healthful and our business men need fear no inconvenience in traveling through said regions. All Central America will profit greatly by the expenditure of several hundred millions by the United States in building the canal. An era of great prosperity is now opening up for these countries. Fortunately for our international commerce, these people are naturally intelligent and progressive, quickly taking to new ideas and new methods.

I believe that a vast traffic will be done here in the

to assist in starting the tap if it has become dull, or for any other reason is hard to start. The tap sockets are arranged so that taps can be removed or inserted while the machine is running at full speed, although it is possible to stop any spindle independently of the others by raising the corresponding hand lever to its highest point, which causes the driven gear to be disengaged. Either right or left hand nuts can be tapped with equal facility. The gears are cut from solid stock, and are enclosed in a housing at the top of the standards, which protects them from dirt and avoids the danger of accidental contact by the attendant. Near the bottom of the machine, close to the left hand standard, is shown a rotary oil pump, which forces oil through piping to be discharged in jets against each tap, lubricating and cooling it and washing away the chips. The oil and chips are drained into two large iron drawers having screen bottoms. The oil filters through the screens and is re-



THE NATIONAL SIX-SPINDLE NUT TAPPER.

next decade in mining machinery, agricultural implements, railway material, tools and machinery of all sorts.

The National Six-Spindle Nut Tapper.

A multiple spindle nut tapper capable of tapping six nuts simultaneously, or in any order, has been designed by the National Machinery Company of Tiffin, Ohio, and is illustrated herewith. The object of the machine is the handling of work of this character in large quantities of the same size and with great rapidity. Compactness, simplicity and ease of operation were the important ends aimed at in its construction. All useless movements have been avoided, so that advantage can be taken of the high tapping speeds at which it is intended to run.

Bevel gears transmit motion from the horizontal driving shaft to intermediate vertical shafts carrying spur gears which mesh with pinions sliding on the splined tapping spindles. Each tapping spindle is provided with both a foot treadle and a hand lever, the latter to be used

turned to the pump to be used repeatedly, while the chips are retained in the drawers. It is usually sufficient to remove the drawers and dump the chips once a day. All bearings which are likely to become worn are equipped with provisions for taking up the wear and maintaining the alignment. The regular equipment includes six taps and tap sockets of any size within the capacity of the machine—that is, up to 5/8 inch.

In the San Fernando Valley, just to the north of the city of Los Angeles, Cal., a large area is planted each year with wheat. One of the large ranches in this district uses for the harvesting of the wheat an enormous mechanical device which cuts a swath 36 feet in width and then threshes and sacks the product. The machine weighs 100 tons, has an engine of 50 horse-power, operated by steam, with oil as the fuel, and advances across the field at the rate of 3½ miles per hour. A simple calculation will develop the fact that the area covered in one hour is no less than 15 acres, and at the end of the time the wheat is ready for the miller.

Iron Ore Mining in Scandinavia.*

BY W. FISCHER WILKINSON.

The completion in 1902† of the railway which was constructed for the development of the iron ore deposits of Swedish Lapland, and which now has access to the Atlantic seaboard at the port of Narvik or Victoriahavn, was an event of importance. It has long been known that the northern parts of Sweden contain large resources of iron ore, but their inaccessible situation and the rigorous climate that they experience have prevented their being worked on a large scale until quite recent times. Hitherto the only outlet for the ores has been by the port of Lulea on the Gulf of Bothnia, but this port, be-

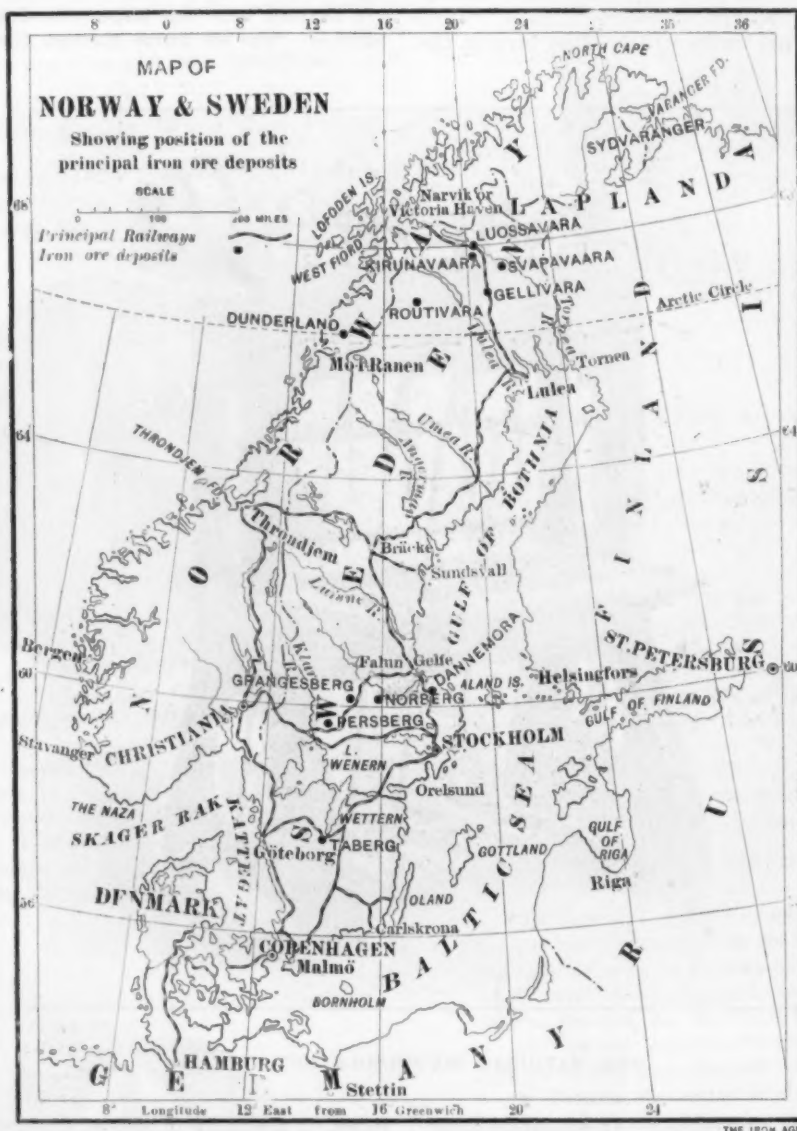
the following quantities were exported to the countries named:

	Tons.
United Kingdom.....	131,558
Holland (for the Rhine iron works).....	471,350
Belgium	119,700
North Germany.....	309,000
France	12,700

Total.....1,044,308

These figures show that nearly three-quarters of the ore went to Germany.

As regards freights from Lulea, the German iron works of Westphalia have no advantage over the English markets, but those of Silesia, which import their ores by Stettin, have a considerably shorter sea carriage than those of England. Narvik, on the other hand, is nearer



MAP OF NORWAY AND SWEDEN.

sides being at a considerably greater distance than Narvik from England, has the disadvantage of being closed by ice for some four or five months in the winter, during which time the ore has to be stored, increasing thereby the cost of production. The port of Narvik, on the other hand, warmed by the Gulf Stream, is open all the year round. The map shows the situation of the principal iron ore deposits of Scandinavia, as well as the principal railways and ports. The ore deposits are indicated by heavy dots.

Sweden has no coal fields of importance, and the iron and steel produced there is made with charcoal fuel. The greater portion of the ores are exported to Germany, the shipments to England having been comparatively small. In 1902, out of 1,074,436 tons shipped from Lulea,

the English ports than either Rotterdam, the principal port for the Westphalian iron works, or Stettin.

The following are the distances by sea from Lulea and Narvik to Middlesbrough and Rotterdam, and from Middlesbrough to Bilbao, the port from which England draws the greater portion of its foreign supply of iron ore:

	Miles.
Lulea to Middlesbrough.....	1,550
Narvik to Middlesbrough.....	1,170
Lulea to Rotterdam.....	1,550
Narvik to Rotterdam.....	1,323
Bilbao to Middlesbrough.....	1,030

The Various Deposits.

The most important deposits of Swedish Lapland now being worked are those of Gellivara and Kirunavaara. The Gellivara mines, which have a land carriage to the port of Lulea of 125 miles, were the first to export ores, and since 1892 these shipments have been considerable

* Abstract of Paper read before the Institution of Mining and Metallurgy, London, England, June 16, 1904.

† The line was opened for traffic November 15, 1902.

and have shown a rapid expansion. In 1892 the exports were 139,194 tons, and in 1902 the quantity of ore brought down from Gällivara to Luleå was 1,114,070 tons.

The Kirunavaara mine, which is situated 188 miles from Luleå, but only 105 miles from Narvik, has only commenced to export ores since the arrival of the railway at the latter port. The Mining Company of Kirunavaara-Luossavara has guaranteed the railway a minimum traffic of 1,200,000 tons per annum. The amount of ore that has actually been shipped during 1903, in spite of the fact that the permanent quays have not yet been completed, and that only one temporary quay was in use, has been between 700,000 and 800,000 tons, and it is probable that during this year (1904) the shipments will largely exceed the guaranteed quantity.

Although the Gällivara deposits and those of Kirunavaara constitute to-day the principal working mines, there are in addition numerous other deposits in Northern Sweden of great importance, which will, in course of time, when railway communications are extended, add considerably to the iron ore production of these countries. Of these the best known are the deposits of Svappavara, lying some 30 miles to the east of Kirunavaara, an iron mine containing considerable quantities of copper pyrites, for which mineral it was once worked; Luossavara, which adjoins the Kirunavaara deposit, to which it is similar; and Routivara, which lies some 70 miles due west of Gällivara, near the Norwegian frontier, and which is at present practically inaccessible. The surveys that have been made of this deposit indicate that it will rank with Gällivara and Kirunavaara as one of the largest iron ore deposits in the world. It is remarkable for containing ores of a high content of titanite acid.

Besides the deposits in Sweden, there are also large occurrences of iron ore along the Norwegian coast, which, although not of the same richness as the Gällivara and Kirunavaara deposits, represent large resources of iron ore destined undoubtedly some day or other to be turned to the uses of man. Among the best known of these are the iron ore deposits of the Dunderland Valley. These Norwegian ores, being of comparatively low grade, depend for their successful working on a suitable concentration process. They are, as a rule, favorably situated near the coast, a fact which helps them to compete with the richer deposits situated inland.

In the southern portion of Sweden the iron ore deposits have been famous from very early times. There are in Southern Sweden a large number of producing mines, but, with the exception of the Grangesberg mine, which is situated south of the famous copper district of Falun, the output is small compared with that of the deposits in the north. The Grangesberg mine had in 1899 a production of about 800,000 tons of phosphorous ores averaging 1.5 per cent. phosphorus. The majority of the mines of Southern Sweden are, however, remarkable for their low contents of phosphorus, and it was from these ores that the finest qualities of iron and steel were produced. Before the introduction of the Thomas basic process for steel making the mining of the phosphorous ore of Grangesberg was actually forbidden, so that the reputation which Swedish iron had obtained in the markets of the world might not be endangered. Of the other mines of Southern Sweden, those of Norberg, Dannemora and Persberg, containing ores with low phosphorus contents, are the next largest in point of production. They are among the oldest mines in Europe, their history dating back to the thirteenth century. The Dannemora ores contain a considerable amount (up to 2 per cent.) of manganese.

Character and Extent of the Deposits.

The geological structure of Norway and Sweden consists principally of the rocks of the earliest formations of the geological scale, which are much disturbed and broken by eruptive rocks, of which granite and gabbro are most in evidence. The iron ore deposits may be roughly classified into two main divisions: 1, Those that occur interstratified with the metamorphic schists, gneisses, granulites and limestones belonging to the Archaic, Cambrian and Silurian periods, and which are of sedimentary origin; and, 2, those that occur as masses associated with eruptive rocks.

The deposits of Southern Sweden belong to the former class, occurring as lenticular bodies in the metamorphic schists, and the deposits of Norway (Dunderland) as well as those of Gällivara and Svappavara, in Swedish Lapland, also belong to this class of deposit; the best examples of the deposits associated with the eruptive rocks are those of Kirunavaara-Luossavara and Routivara. The standard by which the magnitudes of the deposits are compared is by surface area. The survey of the deposits is made by magnetic observations, which system of surveying has been developed to a high state of efficiency. The instruments used are Thalen's magnetometer and Tiberg's inclinometer. With these instruments the magnetic force of the deposits can be ascertained and recorded on a chart or map, showing with unflinching accuracy the extent and boundaries of the ore.

From these magnetic surveys the comparative extent of the principal deposits is as follows: Kirunavaara-Luossavara, 166 square miles; Routivara, 116 square miles; Tiberg (Småland), 100 square miles; Gällivara, 78 square miles; Grangesberg, 35 square miles; Svappavara, 15 square miles; Norberg, 11½ square miles; Dannemora, 5 square miles. The iron ores are magnetites and hematites containing variable quantities of phosphorus, sulphur, manganese and titanite acid. The presence of the phosphorus was, before the introduction of the basic process of steel making, the determining factor as to whether the deposit was workable or not. In the south, the mines, with the exception of Grangesberg, contain ores with only a small percentage of phosphorus. The northern mines, on the other hand, contain ores with a high phosphorus content, due to the presence of apatite, and were on that account considered by the early metallurgists of little value.

While the phosphorous ores are exported in large quantities to Germany to be treated by the basic process, it is noticeable that England only takes the ores which contain a low percentage of phosphorus. These ores produce low phosphorus pig iron, the material most suitable for the acid steel process, which is most in favor in England, as it gives a more regular and reliable material. What, however, can be satisfactorily performed in Germany ought also to be possible in England.

The deposits have nearly all so far been worked as open quarries, but underground mining is now being introduced, especially at Gällivara, where the quarries have in several cases reached considerable depths, and where the danger of falls of ground makes this method of mining necessary. Another reason for the introduction of underground work is that it enables mining to be carried on all the year round, without interruption on account of the snow, which is quite a serious difficulty in these Arctic regions. The Dunderland deposits lie almost exactly on the Arctic circle, while the mines of Swedish Lapland are still further north. In spite of these high latitudes, I was informed the railway was kept open all the year round without much difficulty. The snow is certainly a difficulty, but experience soon shows where snow drifts will mostly occur, and these parts of the line are protected by snow sheds, of which there are now already many examples.

Dunderland.

The Dunderland deposits are situated at the head of the Dunderland Valley, at a distance of about 15 miles from Mo-I-Ranen, a little town at the end of the Ranen fiord, and the mines and the port are connected by a railway, built by the Dunderland Iron Ore Company, Limited, which owns the mines. A large concentration plant, capable of handling 1,500,000 tons of ore per annum, is being put up near the mines from designs by Thomas A. Edison. The crushing of the ore will be done by rolls, the largest size being designed to take pieces of rock up to 6 tons weight. The concentration will be effected in the dry way by magnetic concentration, and is to be carried out in stages, the magnetite being taken out first and then the hematite. The plant is designed to be practically automatic, the ore being conveyed through the different stages of reduction and concentration by means of belt conveyors.

As mentioned in an earlier part of this paper, the Dunderland deposits are, as compared with the Lapland

deposits, low grade, averaging throughout some 40 per cent. of iron. They occur as separate lenticular deposits in a gneiss formation and are spread over a considerable area. The different deposits are estimated to contain about 80,000,000 tons of ore, down to a depth of from 100 to 200 feet from surface.

The Urtvand deposit, which lies nearest the rail head and is the one which is to be opened first, has a length of 3400 feet, and an average width of 138 feet. It is estimated that this deposit contains, from the surface to the railway level (a vertical depth of 120 feet) about 5,500,000 tons of ore. This, of course, does not exhaust the ore of this deposit, which has been proved by drilling to continue in depth, and the figures only indicate what can be taken out by quarrying. Below the level of the railway underground mining will probably be found to be the best method of working. The concentration works will produce from the 1,500,000 tons mined 750,000 tons of clean ore carrying 65 per cent. of iron. This product, which will be in a fine state of division, will be made into briquettes at the port, where works for this purpose are to be erected. The pier for loading steamers has already been built, and suitable arrangements have been made for reducing to a minimum the cost of loading the vessels. At the Urtvand deposit there is an interesting example of a river flowing underground. The deposit lies between two lakes which are not at the same level, and the outflow from one lake disappears down a cavern to reappear in the lower lake. Whether the water has a passage through or under the deposit is not known.

The Dunderland deposits will, in the first instance, be opened out as quarries, and steam shovels, such as are employed in the Lake Superior iron mines, capable of loading as much as 500 tons of ore per hour, will be used.

Up to the present the work done in opening up the deposit has been of an exploratory nature, the mine waiting for the completion of the concentration works. It is expected that these works will be ready by the end of this year (1904).

In order to obtain evidence as to the continuity of these ore deposits in depth, several bore holes have been put down and the continuity of the formation has been proved down to a considerable depth. The ore consists of a mixture of magnetite and hematite, the latter being in larger quantities and being principally in the form of specularite. The low percentage of iron is principally due to the presence of a siliceous gangue, which the concentration process is designed to remove. The phosphorus content of the ore averages 0.2 per cent., and the sulphur content is very low, being, according to Vogt, 0.010 to 0.025 per cent.

The prices paid for labor at the present time are as follows:

	Wages per day.
Miners.....	4 to 5 krs. (\$1 to \$1.25)
Laborers.....	3 to 3.50 krs. (75 to 87½ cents)
Carpenters.....	4 krs. (\$1)
Engine men.....	5 to 6 krs. (\$1.25 to \$1.50)
Masons.....	4 krs. (\$1)

Kirunavaara.

This great deposit has an outcrop extending over 2 miles in length. The hill in which this deposit occurs rises to a height of 830 feet above the surrounding country, and the lake of Luossjarvi separates it from another large deposit called Luossavaara, upon which mining has not yet commenced. The lake itself is 1600 feet above the sea level.

The ore is principally magnetite, and has a width of from 330 to 800 feet at the northern end, now being opened. The average thickness of the whole ridge is estimated at 300 feet. The deposit, which has a dip of 55 degrees to the east, is incased in porphyry. The continuation of the ore in depth has been proved by diamond drilling to a depth of 660 feet. The quantity of ore available in the deposit is so great that the depth to which the deposit goes is more of theoretical than practical interest at the present time. It is estimated that there are 218,000,000 tons of ore at Kirunavaara above the level of the lake, and if a further depth of 600 feet is calculated on the quantity available would be 800,000,000 tons.

Mining is in active operation at the northern end, the ore being quarried in steps 50 feet high, and sent down to

the loading stations by inclines. In September, 1903, the number of men employed was 760. The railway trucks—which are specially built bottom discharge trucks with three axles, carrying 35 tons each—are loaded direct from the ore bins. No sorting is done, but the ore is carefully sampled in the quarries for phosphorus, so that the quality of the ore may be under control. Last year, in September, the production was about 4000 tons per day, and six trains each of 20 trucks holding 35 tons each were sent away to Narvik.

Owing to the difficulty in keeping the inclines and the loading stations on the surface free from snow in winter, which lasts from October to May, steps are being taken to mine the deposit by underground work; a tunnel sufficiently large to take a full sized engine and train will be driven along the deposit and the ore delivered through small connecting shafts, either from the surface or from underground stopes.

At Narvik the ore is loaded direct into ocean steamers very rapidly. In 1903 there was only one temporary pier, constructed of timber. The loading was 4200 tons of ore a day. The height of the quay is 70 feet above low water mark. The net load of each wagon is 35 tons, and the time required to empty a set of ten wagons into the steamer takes about 20 minutes. Dock accommodation is under construction for dealing with a much larger tonnage, it being anticipated that the exports will before long amount to 2,000,000 tons per annum. The new quay, 658 feet long, is being built to the designs of Col. O. W. Lund. The height of the stone work from the tracks on the bottom (27 feet under low water mark) to the masonry is 72 feet. On the top of the masonry will come the wooden pockets 28 feet high, making a total height of 100 feet. The larger arches are 40 feet span.

The height of the masonry of the permanent quay at Narvik, Norway, above the water level is about 37 feet. The ore, which contains from 60 to 65 per cent. of iron, is shipped in specially constructed steamers, and is exported principally to Germany and Sweden. It is worth about \$1.12 per ton, f.o.b. The freight to Rotterdam is about \$1.44 per ton.

Gellivara.

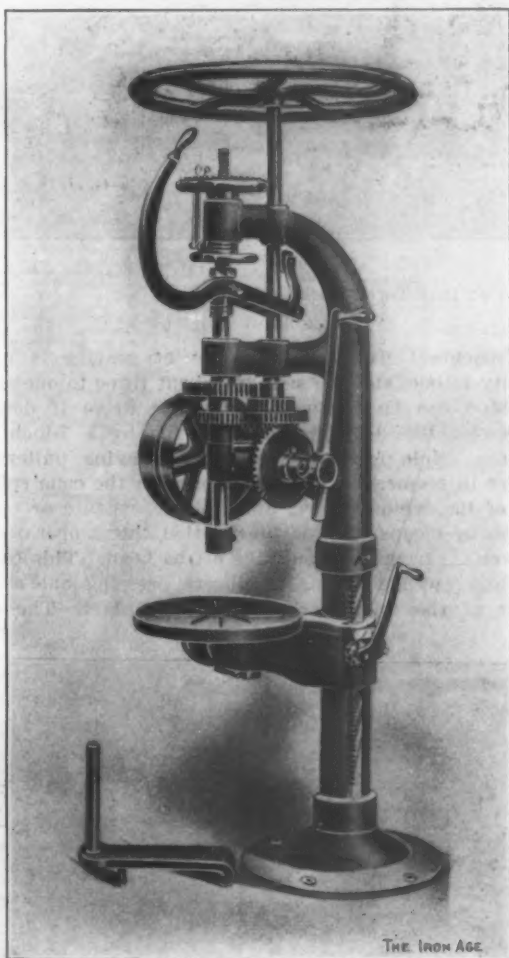
The Gellivara deposits, as mentioned above, have been worked for several years, exporting their ore via Lulea on the Gulf of Bothnia. There are several deposits in operation, and mining is spread over a considerable area. Most of the mining in the past has been by quarry, but since the quarries have reached depths at which mining by this method is no longer safe, owing to the steepness of the walls, deep mining is now employed. The system now used is that known as the filling system, the waste rock from surface being used for this purpose; but I understand that the caving method, now used in the United States, is to be tried. In the filling method, the depth taken out at a cut is 50 feet. The filling is carried close up as the ore is stoped, room being only left for the miners to work. Passes are built in with timber for the ore and for the waste. The main level at the bottom of each stope is timbered.

At Gellivara five classes of ore are made, regulated by the phosphorus contents, as follows: A, 0.05 per cent.; B, 0.05 to 0.1 per cent.; C, 0.1 to 0.8 per cent.; D, 0.8 to 1.5 per cent.; E, 1.5 per cent. upward. A and B are principally treated in Sweden, while C, D and E are exported. This is to meet the requirements of the different buyers of ores, but it is doubtful if it is really necessary or advisable to make so many classes, because such classification causes many difficulties in loading. The miner's pay averages 4.5 krs., say, \$1.20 per day, but contract work is also in force, the men being paid by the tonnage trucked and also by the footage drilled. A good day's work would be 10 feet drilled.

As regards the iron ore resources of the Gellivara district, there is no indication of rapid exhaustion of the ore bodies in depth, and there seems no reason to doubt that the district is capable of keeping up its large output (1,114,070 tons in 1901) for a considerable period. Taking into account the magnitude of the mines already opened and the abundance of similar deposits that are known to exist, there can be no doubt that this quarter of the globe is destined to be an important source of supply of iron ore for many years to come.

The New Champion Upright Hand or Power Drill.

A new upright drill having automatic self feed and lever feed and operated either by hand or power, or both combined, is now built by the Champion Blower & Forge Company of Lancaster, Pa. The two powers being in combination, either is always ready to operate without interfering with the other and without making any changes. The machine is known as the No. 203½ new Champion upright drill and in construction resembles the No. 203, formerly built. All gears are cut and ball bearings are used throughout. The automatic self feed and lever feed are entirely independent of one another and the change can be made in less than a second. Both feeds have instantaneous quick return of the drill bit, dispensing with the annoyance of turning the feed screw back to get the drill out of the work. The table is raised and lowered by rack and pinion, is quick in action, and may be stopped at any point. When used on light work the machine is run with a single gearing between the



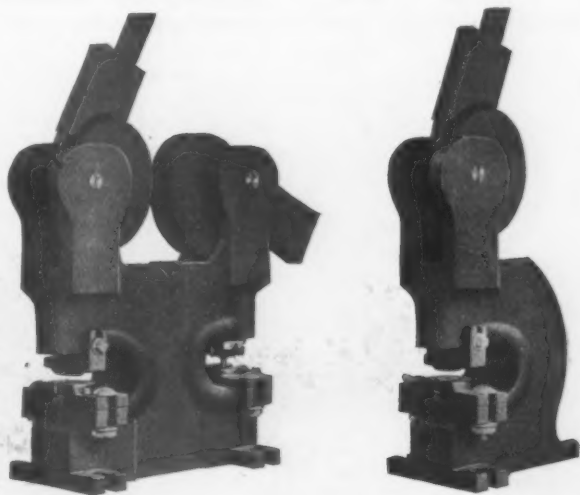
THE NEW CHAMPION UPRIGHT HAND OR POWER DRILL
No. 203½.

fly wheel spindle and the drill spindle, but for heavy work a change to double gearing may be quickly made.

The distance from the center of the drill to the column is 21 inches, and holes up to 1½ inches in diameter may be drilled. The spindle is regularly bored to receive 41-64-inch straight shank bits, or on special order will be drilled to take ½-inch straight shank bits. The feed screw has a travel of 5½ inches. The complete machine is furnished with cone pulley and cone countershaft, or with tight and loose pulley, as illustrated, or for hand power only, and weighs about 550 pounds. The tool is one that will be found especially useful in machine shops, blacksmith shops and carriage shops. Wheelwrights will find the wheel hanger, shown near the foot of the machine, a handy attachment when drilling tires, as its use prevents the marring of painted wheels.

The Butts & Ordway New Single and Double Punches.

New models of single and double Easy punches for general use by blacksmiths, cornice makers, machinists, &c., have just been brought out by the Butts & Ordway Company, 190 High street, Boston, Mass., and are illus-



THE BUTTS & ORDWAY "EASY" SINGLE AND DOUBLE PUNCHES.

trated herewith. The punch slides are depressed by cams mounted on stout trunnions and revolved by long handles giving a tremendous leverage. It will be observed that the cams of the double punch are each grooved to give clearance for the operating lever of the other, so that a full stroke down to a horizontal position is possible. The punches, having open throats, are especially adapted for use on angles and tees. They may be fitted with round punches and dies 3-16, ¼, 5-16 or ¾ inch in diameter. The manufacturers state that with additional sets of punches all the advantages of the triple or quadruple machines may be had in these single or double punches.

The Republic Puddling and Finishing Scales.—The wage conference between officials of the Republic Iron and Steel Company and the Conference Committee of the Amalgamated Association, held in Chicago last week, was adjourned without a settlement being reached. It will be recalled that the Republic Iron and Steel Company held an extended conference with the Wage Committee of the Amalgamated Association, at Cambridge Springs, Pa., just after the adjournment of the annual convention of the Amalgamated Association, held in Cleveland. The Republic Iron and Steel Company requested a reduction in the boiling rate, and also in the finishing mills, which the Amalgamated Association refused to grant. Under the "continuous operation" clause the mills of the Republic Iron and Steel Company have been operating since July 1 under the terms of the old scale, which expired on that date. Under this "continuous operation" clause it was provided that in case a satisfactory settlement of the scale could not be reached, a board of conciliation would be appointed, with full power to act. The Republic Iron and Steel Company has named Henry W. Heedy, of the Ohio, Iron and Steel Company, at Lowellville, Ohio, and the Amalgamated Association has named Ben Davis, of Birmingham, Ala. These two conciliators will probably meet this week and appoint a third, and this board will have full power to fix a scale for the puddling and finishing mills of the Republic Iron and Steel Company. In the meantime the mills of the Republic Company will continue to operate as heretofore, paying the same rates of wages in force prior to July 1.

The Yorkshire Iron & Coal Company, at Tingley, near Leeds, England, has put down gas engines of the Cockerill type to be driven by coke oven gas.

The Bardons & Oliver 5 x 42 Inch Turret Lathe.

Another new tool that owes its existence to the demand created with the advent of high speed steels is shown in the illustrations herewith. It is probably the most powerful automatic chuck turret lathe ever built. Bardons & Oliver, Cleveland, Ohio, the designers and builders, have just shipped the first machine of this pattern to the new shops of the Canadian Pacific Railroad Company, Montreal. Turret machines taking bar stock

centrically with the front end, so that almost perfectly round work is obtained when using forming tools.

The head is shown in half-tones, Figs. 2 and 3, with the cover plate removed, and also in Fig. 4, which is a line drawing showing the construction in detail. The head is double friction geared, giving four spindle speeds without stopping the machine, and if the three pulleys on the triple friction countershaft, which is regularly furnished with the machine, are used for forward speeds twelve spindle speeds are obtainable without stopping

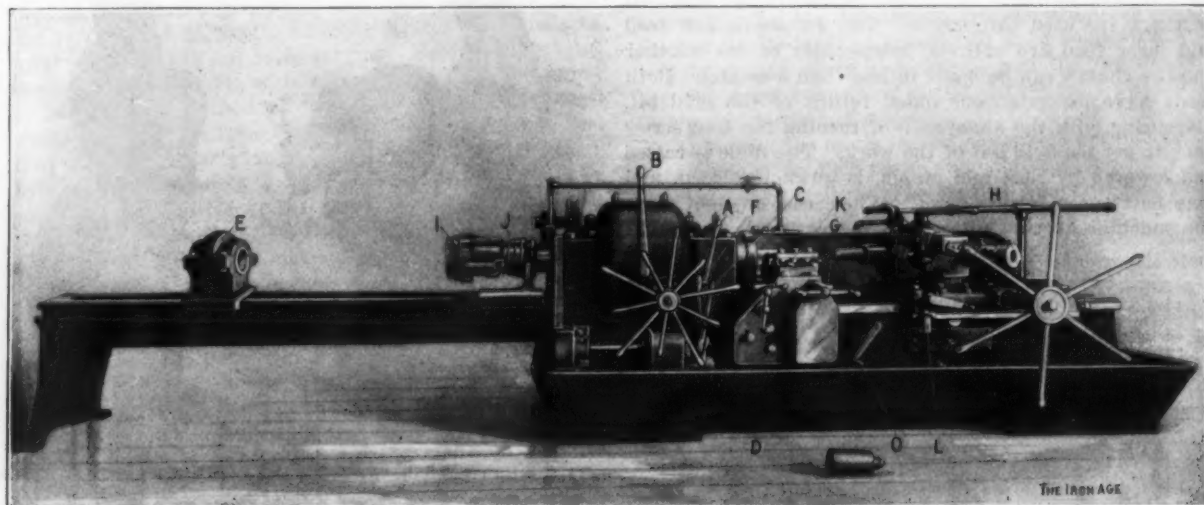


Fig. 1.—The Bardons & Oliver 5 x 42 Inch Turret Lathe.

up to 6 inches in diameter have been built before, but these as a rule have used a special type of lathe chuck for gripping the stock. On this new tool a modified form of the standard automatic chuck has been retained for the reason that the gripping power of the so-called spring chuck, or collet, is believed to be the best means for holding the bar. It is the only form in which the stock is gripped equally around its entire circumference and it also allows the cutting tool to be brought nearer the spindle bearing. The arrangement for supporting the outer end of the bar is another new feature of this

the machine. The greatest ratio of gearing is about twenty to one, and the smallest about three to one. The machine can be arranged for motor drive if desired, otherwise the cone spindle is driven by a 7-inch belt from a triple friction countershaft having pulleys 24 inches in diameter. The back gears on the cone spindle are of the ordinary form and are thrown into or out of action by means of a double friction clutch operated by a lever, A, from the front side of the head. This causes a sliding wedge to engage fingers pressing one or the other of the friction surfaces into contact. The cone

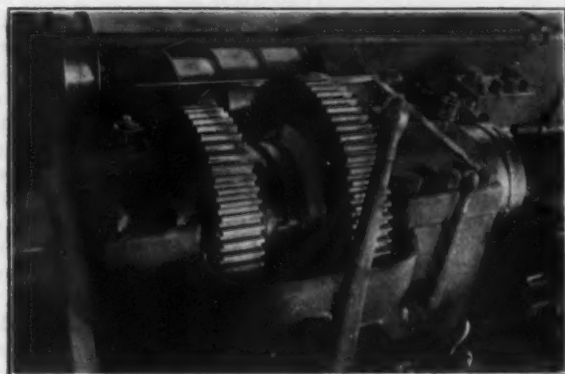


Fig. 2.—The Head with Cover Plate Removed, Exposing the Spindle Gears and Their Clutch.

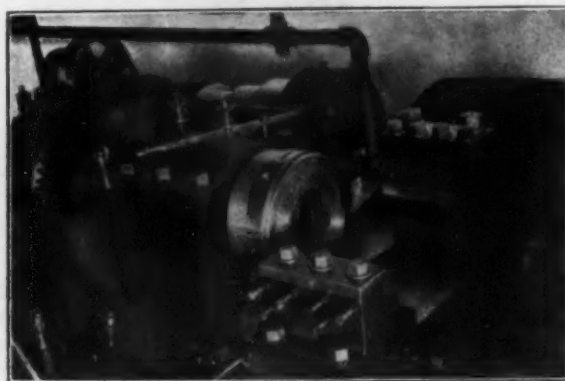


Fig. 3.—The Head Looking Toward the Collet and Showing the Forming Slide.

lathe. Ordinarily a chuck is placed at the rear end of the spindle, which must be opened and closed after each piece is made, or else the bar is allowed to revolve in a forked bearing or bushing supported on a light standard at some distance from the rear end of the head. Instead of either of these arrangements this machine has a heavy guide bolted rigidly to the rear end of the head, extending far enough to reach the end of a 20-foot bar when placed in the machine. A carrier slides on this guide, which contains a revolving bushing or chuck having four screws placed in quadrature around its circumference and centrally lengthwise. This carrier supports the outer end of the bar and causes it to revolve con-

spindle *a* is connected with the main spindle *b* through an intermediate shaft, *c*, carrying a sleeve gear and pinion meshing with the two large gears on the main spindle. These two gears are loose on the spindle and either can be clutched to it by moving the lever *B*, which works through a friction mechanism similar to the one on the cone spindle. Babbitt is used in the main spindle and cone spindle bearings. The main spindle bearings are oiled through sight feed lubricators located on the tops of the caps. The front bearing is 8 inches in diameter by 13 inches long. Through the center of the cone spindle *a* a hole extends almost its entire length, which connects at one end through a stuffing box with a

fixed lubricator. Small radial holes lead from the central hole to all bearings of the spindle and the friction parts, providing thorough lubrication by centrifugal force from this one source of supply. As this is a fast running shaft, the need of some such arrangement is readily appreciated. The intermediate gear shaft *c* is lubricated in a similar manner. All of the gears and rotating parts on the head are fully inclosed.

The stock is held at the front end of the spindle by means of a master collet, shown in detail in Fig. 5. The interchangeable false jaws for various sizes of stock are inserted or withdrawn without removing the collet or collet ring from the spindle. To allow this the jaw screws are extended through large holes in the spindle to a point nearly flush with the outside. A sliding ring covers these holes when the machine is in use. To increase the gripping power of the false jaws they are usually serrated. The collet is closed upon the stock by means of the large turnstile on the front of the head, which operates a sliding wedge and fingers on the rear

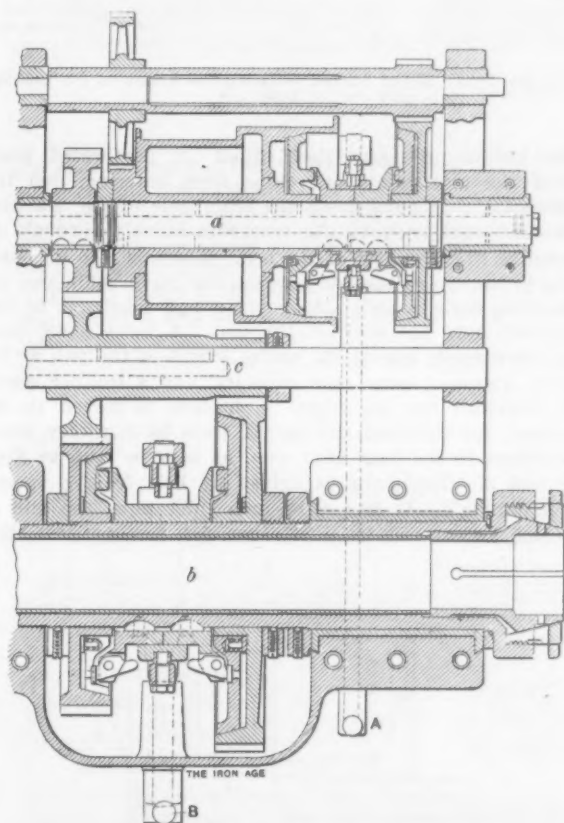


Fig. 4.—Sectional Plan of the Head Stock.

end of the spindle. Variation in the size of the bar is allowed for by making this wedge with three steps, as shown at J in Fig. 1. The collet is adjusted by a regulating nut, I, at the extreme rear end of the spindle, so that the fingers rest on the middle step of the wedge when gripping stock of the normal diameter. If the stock is a trifle small the fingers run up to the large step of the wedge, or if a trifle large they stop at the small step, so that the bar is always securely held by the collet.

The feed dog, or carrier, E, Fig. 1, is shown in detail in Fig. 6. This, as has already been explained, serves another purpose than merely feeding the stock. It is in reality a four-jaw independent chuck, by which the stock is not only supported at the outer end but can be made to run concentrically with the spindle. The feed dog is moved along its bed by the smaller turnstile on the front of the head. The shaft of this turnstile passes through the center of the shaft on the larger turnstile, which operates the mechanism for opening and closing the collet. It has been customary to make one turnstile serve both of these purposes, but with this construction ample power can be had for operating the chuck, while for feeding the stock forward, which requires com-

paratively little power, a quick motion of indefinite length is obtained. Movement of the feed dog is communicated from the shaft of the smaller turnstile by an endless sprocket chain.

The combined forming tool and cutting off tool slide is one of the most noteworthy features of this machine. It has been designed specially to do as much of the work as possible with wide forming tools fed crosswise against the work rather than with end cuts by the turret tools. Experience obtained in the manufacture of

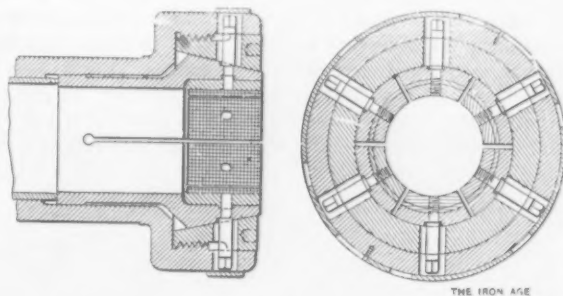


Fig. 5.—Longitudinal and Transverse Sections of the Master Collet.

bicycle hubs, projectiles and other irregular shaped pieces of circular cross section has demonstrated the advantage of this method wherever it is practicable. The forming slide, shown in longitudinal section in Fig. 7, is made long and heavy and carries two massive tool blocks, one at the rear for the roughing tool and one at the front for the finishing tool. Tools for forming up to 12 or 14 inches in length can be held in these holders. The holders are removable and special attachments can be fitted for other classes of work. Vertical adjustment of the forming tools is obtained by taper wedges, *d*, *d*, regulated by screws. The tools are clamped solidly to the holders by bolts passing directly through them. Screws are also provided for the lateral adjustment of the tools. The forming slide can be fed by hand or power in either direction. The hand feed is operated by the crank G, and the power feed has four changes, controlled by the lever C, Fig. 1, and the reverse is obtained by the lever D. The feed has an automatic release in either direction. In practice the roughing tool is usually fed by power and the finishing tool by hand.

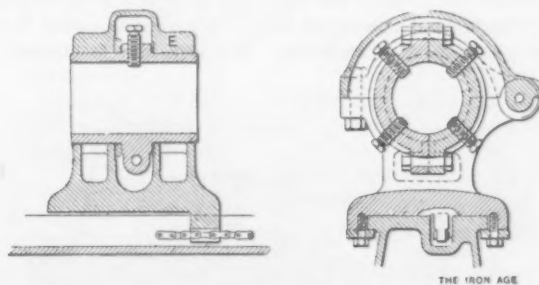


Fig. 6.—The Feed Dog Which Supports the Outer End of the Bar.

A graduated dial on the handle enables work to be formed accurately to size.

There are two cutting off tools, mounted on separate slides, as shown in the longitudinal section, Fig. 8. These have a cross feed through a handle, K, entirely independent from the forming tool slide, although they are carried on the same saddle casting. This saddle has a longitudinal adjustment of $3\frac{1}{2}$ inches by means of handle, Fig. 1. The cutting off tool slides are fed in simultaneously by right and left hand screws, either by hand or power. Power feed is taken from the same shaft as the power feed for the forming slide, but it has a separate throw out. The front cutting off tool slide is adjustable through the screw *e*, Fig. 8, so that the tools can be set to cut equally. The cutting off blades are made of high speed steel and are of special cross section. Four changes of feed can be obtained, by means of the lever C, Fig. 1.

The turret and turret slide, while large, are not so heavy that they cannot be readily operated by hand. The most severe duty falls on the forming slide, and with this in mind care has been taken in designing the turret and slide not to make them clumsy and difficult to handle. The turret, shown in detail in Fig. 9, travels directly on the bed on flat bearings of ample width. Wipers on the front end of the slide keep these bearings clean. A taper pin runs the length of one side and provides means for taking up side wear. The turret is hexagonal in form and is 18 inches in diameter across the flats. Each step of the turret has an independent stop, these stops having a range of 36 inches, while the total feed of the turret slide is 42 inches. Eight $\frac{3}{4}$ -inch holes are drilled and tapped in each face of the turret for attaching various tools. There is a $\frac{1}{2}$ -inch hole in the center of each face and also through the center stud,

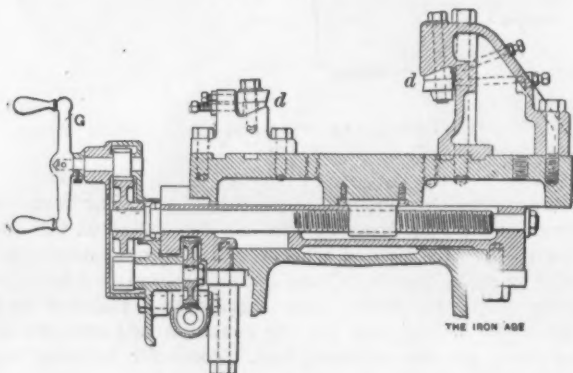


Fig. 7.—Longitudinal Section of the Forming Slide.

thus enabling work up to $4\frac{1}{4}$ inches in diameter and 42 inches long to be turned. This diameter can be increased if desired. The turret slide can be fed by power with four changes of feed, instantly obtained by manipulating the lever F, Fig. 1. The power feed can be tripped at any point by each of the independent stops, which also serve as dead stops for the hand feed. For throwing the power feed in or out the lever L is provided. The turret is revolved by hand, after first withdrawing the lock bolt *f* through lever H, Fig. 1. Means are provided for locking the lock bolt after it is withdrawn, if desired, so that the turret can be revolved in either direction past one or more holes. The lock bolt is tapered on

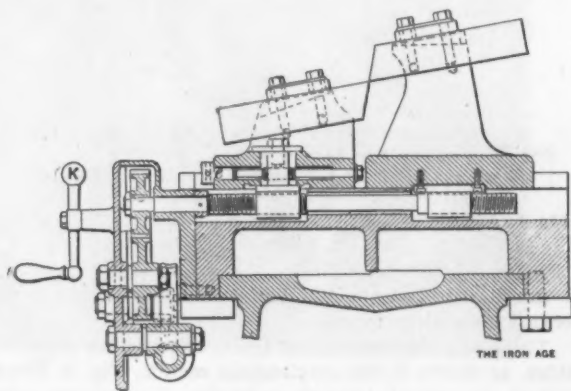


Fig. 8.—Longitudinal Section of the Cutting Off Slide.

the upper end and fits into hardened and ground steel bushings on the bottom of the turret and slides in hardened and ground bushings in the turret slide. On the bottom of the turret there is a large projection fitting into a corresponding opening in the top of the slide. This takes the greatest part of the thrust, but there is in addition to this a taper bushing inserted in the center of the turret, where it bears on the steel turret stud, which extends from the under side of the turret slide to the top of the turret. This bushing is adjustable endwise to take up wear. The turret stud extends through a

large washer on the top of the turret and is threaded on the outer end to receive a binder handle by which the turret and slide can be clamped solidly together.

The base of the machine is cast in the form of a pan, which has a large reservoir at the back, so that an abundant supply of lubricant can be accommodated with-

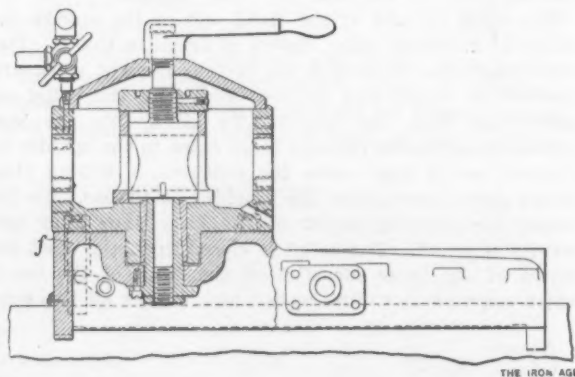


Fig. 9.—Detail of the Turret, Showing the Action of the Locking Pin.

out keeping the pan itself filled. A perforated plate over the reservoir keeps chips from entering, and the lubricant that runs down the front side of the machine is conducted back to the reservoir quickly through an opening in the center of the bed. There is also an opening in the top of the bed between the turret slide and the forming slide, which allows chips and lubricant to fall directly into the back of the pan. A large sheet steel guard extends almost the entire length of the pan at the rear, giving a large chip capacity, and a smaller guard is provided for the front. Lubricant is forced to the turret, forming and cutting off tools by a rotary pump fastened to the back gear arm, as may be seen in Figs. 2 and 3. The pump is driven by belt from a special countershaft. It has a $\frac{1}{4}$ -inch inlet pipe, the end of which is covered by a strainer for further protection

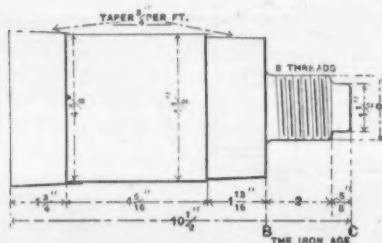


Fig. 10.—A Cross Head Wrist Pin Made on the Lathe in 18 Minutes.

from chips. Two 1-inch outlets are provided, one for the turret tools and one for the cutting off and forming tools, through which continuous streams of lubricant are passed while the machine is running. The supply is directed and controlled by levers conveniently located and connected with three-way valves. An automatic relief valve allows the escape of lubricant when the discharge is checked or stopped. The pump can be stopped while the machine is running by the lever N, Figs. 2 and 3, located above the front cap, which operates a clutch on the pump shaft. At each end of the pan lugs are provided to facilitate the handling of the machine with jacks.

Fig. 10 shows a cross head wrist pin made on this machine from $4\frac{1}{8}$ -inch bar stock in eighteen minutes, and Fig. 11 the tools used. The first operation after chucking was the turning down of the part of the pin from B to C from a diameter of $4\frac{1}{8}$ inches to 2 inches. This was done in seven minutes with one cut by the box tool. This tool is exceedingly strong. The cutter, which is made of high speed steel, is provided with releasing mechanism, so that the work will not be scored when the tool is being moved back. The two back rests are adjustable

in and out to support the work at the proper place. The next operation was the turning of the cotter pin end by the pointing tool, which is held in a tool holder clamped to the face of the turret. These holders allow tools having shanks to be used in the machine. The third operation was the cutting of the 2-inch thread with the self-opening die head, which is provided with a roughing and finishing attachment. Only one die head is usually sent with the machine, although two are shown in Fig. 11,

tremely adverse conditions. During the past year its equipment has been materially increased, and now includes a full line of the staple sizes and styles of radiators. The quality of its product is unexcelled, its manufacturing cost low, and with the return of a normal market the profits will be materially increased.

Central Iron & Coal Company.—This company began producing August 4, 1903, before its construction work was completed, and has since that time encountered the usual

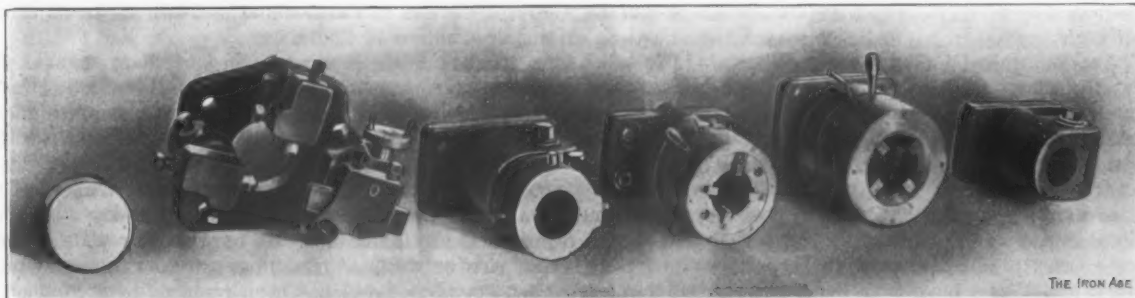


Fig. 11.—Turret Stop Bar, Box Tool, Pointing Tool, Two Die Heads and Tool Holder.

one of these being arranged with a sliding holder for use when cutting fine threads. The part of the work from A to B was turned by forming tools made of high speed steel. While the piece is being formed the cutting off tools are started, thereby saving some time.

Fig. 12 shows a number of pieces that can be made on this machine and also gives the time required to make them. No further finishing is required after they come from the machine and the pieces are guaranteed to be

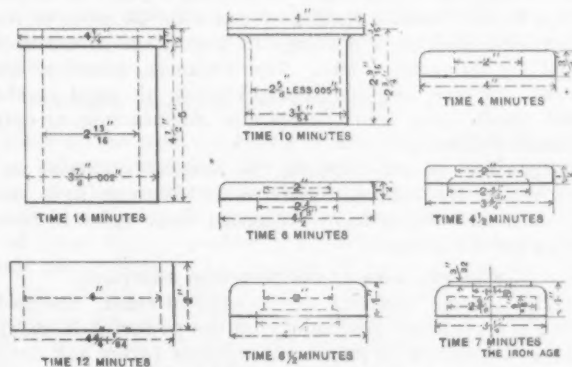


Fig. 12.—Other Pieces of Work and the time Required to Make Them on the Bardons & Oliver Lathe.

not more than 1-1000 inch out of round. This machine can also be furnished to take bar stock 6 inches in diameter.

The Central Foundry Company.

Alfred Fowle, Jr., president of the Central Foundry Company, says in his report for the fiscal year ending June 30, 1904:

General Results.—The results for the past year, while a disappointment to our expectations of a year ago, will, we trust, be accepted as satisfactory, after taking into consideration the depressed conditions that have existed in all classes of business, especially the iron industries and building trades, and the labor troubles that have been practically continuous in certain sections, all of which have tended to restrict consumption, reduce values, and, in some instances, increase competition. Considerable advancement has been made in the development of certain branches of the business, from which gradually increasing advantages should follow.

Central Radiator Company.—The first year's operations of the Central Radiator Company with a new line of supplies, untried by the trade, and in a largely restricted and constantly declining market, has demonstrated the company's ability to maintain itself under ex-

difficulties incident to the establishing of labor organizations at ore mines, coal mines, limestone quarry, coke ovens and furnace, each of which properties must be kept in practically constant operation and in constant touch with one or more of the others. The cost of our pig iron has been steadily decreasing, and justifies the expectation of our producing a grade of iron particularly adapted to our own consumption at as low a cost as any furnace in the Birmingham district. The present cost will be further reduced as the production is increased.

Outlook.—The conditions surrounding the future of the markets for your several products are too uncertain at the present time to justify any predictions for the ensuing year; but it is believed that with your increased lines a satisfactory profit can be maintained until the consumption of the country is again on a normal basis.

The results for the fiscal year ending June 30 are:

	1903-04.	1902-03.	1901-02.
Earnings from sales, less operating charges.....	\$467,504	\$665,449	\$378,055
Deduct:			
Bond Interest.....	231,780	231,780	231,780
Replacement and betterment of equipment.....	17,290	81,056	40,272
Depreciation.....	218,434	343,891	39,818
Miscellaneous.....		8,722	9,068
Totals.....	\$467,504	\$665,449	\$320,938
Balance (credited to deficit July 1, 1901).....			\$57,117

Balance Sheet June 30.

	1904.	1903.
Plant investment.....	\$15,345,382	\$15,522,756
Treasury stock.....	700,000	700,000
Stock of subsidiary companies.....	1,100,000	700,000
Notes from subsidiary companies for advances, &c.....	*117,908	189,219
Accounts and bills receivable.....	408,021	431,863
Inventory.....	426,218	447,339
Cash.....	63,447	53,905
Unexpired insurance.....	3,025	5,607
Furniture and fixtures.....	4,771	4,771
Totals.....	\$18,168,772	\$18,055,460
LIABILITIES.		
Capital stock.....	\$14,000,000	\$14,000,000
Debtenture bonds.....	3,863,000	3,863,000
Accrued bond interest.....	38,630	38,630
Accounts payable.....		149,379
Taxes and licenses.....	267,142	4,452
Totals.....	\$18,168,772	\$18,055,460

* \$10,000 notes discounted have been deducted, contrasting with \$175,000 deducted in 1903.

The reduced rates on iron and steel materials from Pittsburgh to the seaboard for export, which were granted by the railroads some time ago and were to continue until August 31, it is now announced will remain in effect until January 1.

A French View of the English Iron Industry.—I.

The Natural Conditions Under Which the Industry Has Developed.

Some time since* we quoted the conclusions reached by two French engineers on the iron industry of Germany. We present below some of the points brought out in a similar summary by the same gentlemen, E. de Billy and J. Millus. The series has been printed in the *Revue de Metallurgie*.

The metallurgical industry of Great Britain is founded essentially upon the wealth of coal in that country, and the great number of deposits of fuel explains the number of centers of production of metal, all of them, with the exception of the Northwestern district, being located close to collieries. The districts of the interior, notably Sheffield, are extremely old. They were based upon numerous local iron ore deposits, usually lean but abundant, and in some cases productive even to-day. The districts of Scotland and Wales have been developed during the last 150 years, and were created by the proximity of considerable deposits of coal and of deposits of iron ore whose exploitation, so far as Scotland is concerned, was simultaneous in many cases with that of the mining of coal. The discovery of the Cleveland ores, located not far from the Durham coal basin, occurred only in 1840, and soon after led to the creation of a new metallurgical center, which rapidly took first rank over its rivals. As early as 1830 the existence of the rich and pure hematites of the Cumberland district was known, but the absence of coking coals in this region retarded their utilization, and it was necessary to wait 30 years until Bessemer's invention changed the metallurgical future of the Northeast and justified the transportation, in spite of its high cost, of Cleveland coke to the blast furnaces of Cumberland.

The invention of the converter possessed for the English iron industry consequences even more important than the creation of a new producing district. England, which even then was unable to supply its ores when the works could utilize its phosphoric ores, began to face a great deficit, in spite of the output of the newly discovered deposits of the Cumberland district, as soon as the steel works which arose in all the producing centers had rushed upward the demand for pure ores. It was, therefore, necessary almost immediately, in 1865, to appeal to foreign countries. As early as 1870 400,000 tons of pure ores were imported. In 1882 the quantity was 3,080,000 tons, and in 1902 6,440,000 tons. At the same time the production of home ores rose and kept growing until 1882, reaching its maximum of 18,175,000 tons in that year. Since then it has declined as the result of the gradual exhaustion of the different deposits, including those of the Northeast. The growing influx of foreign ores into Great Britain has tended to accentuate the influence of her resources in fuel on the development of the different metallurgical centers. This will be observed in the case of the Cumberland district, which has been particularly affected by the recent crisis in the steel industry.

Nearly all the great English works possess their own collieries and their own coke plants. The only exceptions are the Cumberland district, which buys its coke, and the numerous open hearth steel works of Wales, Scotland and the interior, the majority of whom do not possess blast furnaces. Coking coals are mined only in two districts: Durham, famous for the quality of its products, and Wales—both of them close to the coasts. Scotland feeds its furnaces with raw or "splint" coal. The beds of this character are being exhausted and, therefore, the works mix with this fuel coke, which can also be produced on the spot with the aid of patent coke ovens.

Coal and therefore coke may be produced cheaply in England, the conditions bearing on mining being generally very favorable to low costs, in spite of the relatively high royalties, which are 6 pence on an average. In Wales, however, the workings have become pretty deep, labor is becoming more and more exacting, and costs have therefore risen.

So far as ore is concerned, only the very largest works

own their own mines either in Great Britain or abroad. Generally speaking, the English iron industry purchases its ores in the open market, and this ore is relatively dear, either because in the case of home ores the royalties are high (being 6 pence in Cleveland, 1 shilling 6 pence in Cumberland, and 2 shillings 6 pence for the blackbands of Scotland), or, in the case of imported ores, as the result of heavy demand in recent years. In order to escape from the fluctuations of market prices ten of the large works, four of them in Wales, three in Cleveland, one in Cumberland and two in Scotland, have acquired mines in Spain.

English labor is strongly organized in unions. It is skillful, but exacting, and in the Southern collieries very irregular and lacking in discipline. Wages are high, 1625 to 1975 francs per year for the whole of the iron workers. The miners earn on an average 6 shillings per day, as compared with 4 shillings in Germany. Wages are generally calculated on the basis of 1879, when they were automatically fixed in Wales by a sliding scale following the rise or decline in selling prices. This system has been abandoned and has been replaced by a kind of permanent arbitration. At the close of the great boom of 1899-1900 reductions of 15 to 20 per cent. in the iron works and of 34 per cent. in the collieries took place, which leave to-day only a premium of about 20 per cent. above the basis of 1879 for the blast furnaces, 32 per cent. for the Durham collieries, and 44 per cent. for the Welsh collieries. During the last two years further reductions have been difficult to obtain, although selling prices have gone down further. A reduction of 10 per cent. has been accepted in the steel works of the Cumberland district and other less important works and, finally, in the puddling mills of the Northwest.

A further element characterizes the English industry in the high freight charges (1 shilling 5 pence in Wales for a 12-mile haul, 2 shillings 5 pence for 30 miles in the Cleveland district, 6 shillings to 7 shillings in Cumberland for 50 to 60 miles). The distances, however, are short, and the costs of transportation, in spite of the high tariff, enter into the costs of manufacture to only a limited extent.

Such are, in a few words, the natural conditions under which the different districts in England have developed, and which have influenced their specialization along certain lines.

The Features of the Different Districts.

The central districts are greatly divided, Sheffield being the principal one, supplying the powerful industry of the Midlands with its special products (army and navy purposes, tools and machinery). All the different processes of the manufacture of steel are employed, but, the local deposits all carrying phosphorus, it becomes necessary to bring pure pig irons from the districts on the coasts.

Cleveland produces 23 per cent. of the total English output of pig iron and 25 per cent. of that of steel. Its basic pig iron, made from local ores and from some imported ores, is largely shipped to other districts, Scotland in particular, or is exported. The same is true of a part of the hematite pig, which is all produced from imported ores. Of the total make of pig iron of the Northwest, 40 per cent. is derived from imported ores. The district takes by far the leading place in shipbuilding and is an important producer of plates and shapes for ships (all of them being made of steel), and also of rails, merchant shapes and boiler plate.

Scotland, which produces 18 per cent. of the steel and 22 per cent. of the wrought iron, furnishes only 15 per cent. of the pig iron. It is primarily the country for plates (making nearly as many ship plates for the Clyde yards as does the Northwest) and skelp for merchant pipe. A considerable tonnage of iron and steel castings is made for the numerous machine shops of this region, which produce machines, engines, dynamos, tools, &c. Wrought iron has maintained a certain importance, although its decline has been suddenly accelerated during the last two years. The ores of the country, which are being rapidly exhausted, are used now only for basic purposes, 80 per cent. of the pig iron being made from imported ores.

* In the issues of June 30, July 7 and July 14.

The Cumberland district produces 9 per cent. of the pig iron and 9½ per cent. of the steel, and Lancashire 7¼ per cent. of pig iron and 7 per cent. of steel. Both of the districts hardly produce any Bessemer pig, and the Bessemer steel made is almost exclusively used for track material, rails, sleepers and bridge work. The plants furnish plates and shapes for the shipyards of the district, and also make boiler plates. They import more than one-third of the ores consumed, the supply of the famous local hematites having been insufficient for a long time.

Finally, Wales, entirely dependent upon foreign ores since the Cumberland hematites have failed, produces only 10 per cent. of the pig iron made in England, although it furnishes 22 per cent. of the steel. More than one-half of this pig iron is converted by the acid Bessemer process into rails and shapes, very important quantities of which are exported by the district. The balance, together with Cumberland or Cleveland hematites and scrap, is put through open hearth furnaces, which supply the numerous sheet mills of the basin. Wales is a great producer of corrugated, galvanized and other sheets, of wire and, above all, of tin plate.

The only two coast districts which have, so far as steel is concerned, shown some recent progress are Cumberland and Wales, although their production of pig iron has shown some falling off. Scotland and Cleveland have simply maintained their pig iron production, while falling off in steel. Altogether one-sixth of the product of England is still wrought iron, 60 per cent. of the steel is made in the open hearth furnace, three-fourths thereof acid, and 40 per cent. of the steel is made in the converter, two-thirds thereof on an acid lining. More than three-fourths of the acid steel is produced from foreign ores. All the English ores, with the exception of those of the Cumberland district, are too high in phosphorus, although too low, on the other hand, to greatly favor the basic Bessemer.

British Equipment and Organization.

A study of the equipment and of the organization of the iron industry of Great Britain leads to the impression that it is less modern than that of America and Germany. It is not so much concentrated, only three plants in all of Great Britain producing more than 250,000 tons of metal per annum. The average of the large works make from 100,000 to 150,000 tons. The capacity of the equipment is not great. The best furnaces yield 1600 to 1700 tons of pig iron per week, and this figure is exceptional, the average dropping to 300 tons in Scotland with its raw coal. The best Bessemer shops when they are running continuously do not go beyond 500 to 600 tons per shift. On the other hand, the open hearth plants, which are very much more numerous in England, have greater units. From 30 to 40 tons is the average, and the tendency is to adopt Talbot furnaces of 100 to 200 tons, but even the 50-ton furnaces only reach an output of 500 to 550 tons per week under exceptional circumstances. At least eight of these open hearth plants have 10 to 15 furnaces each, and three of them from 19 to 28 furnaces. So far as the English rolling mills are concerned they are distinctly inferior to those of the great German and American works, excepting some recent plate mills.

From a commercial point of view there is nothing which compares with the United States Steel Corporation of America or the powerful selling associations in Germany. The individualism of English iron makers has until now rendered every trust impossible or short lived, and the commercial organization has been unchanged for half a century. The only branch which has some general and fairly effective organization is that of the producers of rails. It would seem that in all branches the English iron masters, after the enormous efforts which they made until 1880 and which left them masters of all the markets, have paid little attention to inventions which originated elsewhere, being confident of their own strength and of the efficacy of their methods. This impression is confirmed when the fact is considered that the majority of the great works in England are old established; nearly all of them existed in 1880,

and several were famous even at the outstart of the nineteenth century. During the last 23 years a large number of them have not changed their capacity of production at all, not having added even a single blast furnace to their equipment. While in Germany and in the United States a remarkable renovation has taken place, the English iron makers have limited themselves to maintenance or to the cost growing out of the substitution of open hearth steel for puddling. They have practically carried out no new work during the last 20 years. In spite of the enterprise of Englishmen, there not been a single flotation in recent years in the iron industry. The production of pig iron in the various districts has remained practically stationary from 1882 to 1902. Cumberland, which is poorly supplied with fuel, has declined with the output of its ores. Scotch makers have held their own by substituting foreign for home ores. Wales, deprived of a local supply of ore and not having, as the two districts named, the great shipyards as customers, has slightly declined. It is only the central district, though supplied only by relatively poor local ores, that has followed in the wake of the development of the rich industrial districts which it supplies.

There has manifested itself during the last three years a movement toward reorganization in the English iron industry, which may, if it develop further, have considerable consequences. Until now it has been limited exclusively to the Cleveland district and to Wales. In the former, three undertakings in 1902 and 1903 and three others toward the end of 1903 have united into two large groups, representing together 7 plants, 21 furnaces, 6 open hearth or Bessemer steel works, mines, collieries and coke ovens. At the same time a number of furnaces have been reconstructed, and gas motors supplied from the blast furnaces have begun to make their appearance. American engineers have been engaged, three large steel works have been entirely transformed, new collieries have been opened by the works and the recovery of by-products from coke ovens has become more general. Finally, the Cleveland district has been working toward the more general introduction of the basic process.

In Wales the principal group of works and collieries which existed before has strengthened itself by the absorption of new works under a new management, and in that way has reached the position of one of the most important instruments of production of Great Britain. The use of electricity has at last spread rapidly in the greater number of the English steel works, and 17 open hearth plants have ordered mechanical charging apparatus.

After these general considerations we may now take up the separate study of the different producing regions. No reference will be made to the central district, which is not involved in the export question, so far as the products are concerned, to which this study has limited itself.

Wages in Krupp Works.—Consul-General Richard Guenther, Frankfort, Germany, reports, under date of July 21, that according to the published statement of the Krupp Works the total number of persons employed by the firm on April 1, 1904, including 4190 officials, was 45,289. Of these the cast steel works at Essen employed 25,041; the Gruson Works at Buckau, 3329; the Germania shipbuilding yard at Kiel, 2811; the coal mines, 7877; the iron mines, &c., 6231. The average daily wages in the cast steel works were as follows:

Average Daily Wages in Krupp Cast Steel Works, 1853-1903.

Year.	Daily wage.	Year.	Daily wage.
1853.....	\$0.32	1890.....	\$0.85
1860.....	.49	1900.....	1.14
1870.....	.73	1901.....	1.00
1875.....	.93	1902.....	1.08
1879.....	.72	1903.....	1.09

The Philippine Commissioners to the World's Fair have ordered from the Spangler Mfg. Company of York, Pa., a sample machine, to be used to extract fiber from the banana tree, which grows in profusion in the islands. If it is successful large numbers will be ordered.

The Queen City Sixteen-Inch Crank Shaper.

A 16-inch crank shaper especially designed for durability under heavy service is the latest new tool built by the Queen City Machine Tool Company of Cincinnati, Ohio. The accompanying illustrations show its general appearance externally and the construction of its novel features, Fig. 1 being a half-tone of the complete machine seen in elevation from the driving pulley side, and Figs. 2 and 3 details respectively of the drive and its control and the mechanism for imparting motion to the ram.

The back gearing, shown in Fig. 2, has a ratio of 20 to 1, by means of which the full benefit is derived from the use of high speed steels. The gear change for the transmission from the cone pulley spindle to the intermediate shaft which drives the bull wheel is effected by means of the handle and shifter shown at the right in Fig. 2. This handle may also be seen in Fig. 1, projecting just above the cone spindle. The column is of large pro-

ated collar. Vertical adjustment is effected by bevel gears, which are provided with ball bearings to reduce friction and means for protecting them from chips and dirt. The telescopic screw used for the vertical movement does away with the cutting of a hole in the floor.

The rocker arm shown in Fig. 3 is connected to the ram by means of a link properly set to give a straight pull and an even cutting speed with a very quick return and practically no lost motion. The provisions for compensating for the wear on the crank shoe are noteworthy and will be appreciated by reference to the figure. The table is of box form with T-slots on the top and sides and a V-groove for holding shafts and similar work vertically. The table can be readily detached from the saddle; it has extensions giving a broad clamping surface and making it possible to use the full length of the stroke. Where desired an outer support can be furnished to give extra rigidity.

The vise is of the planer type, which is capable of

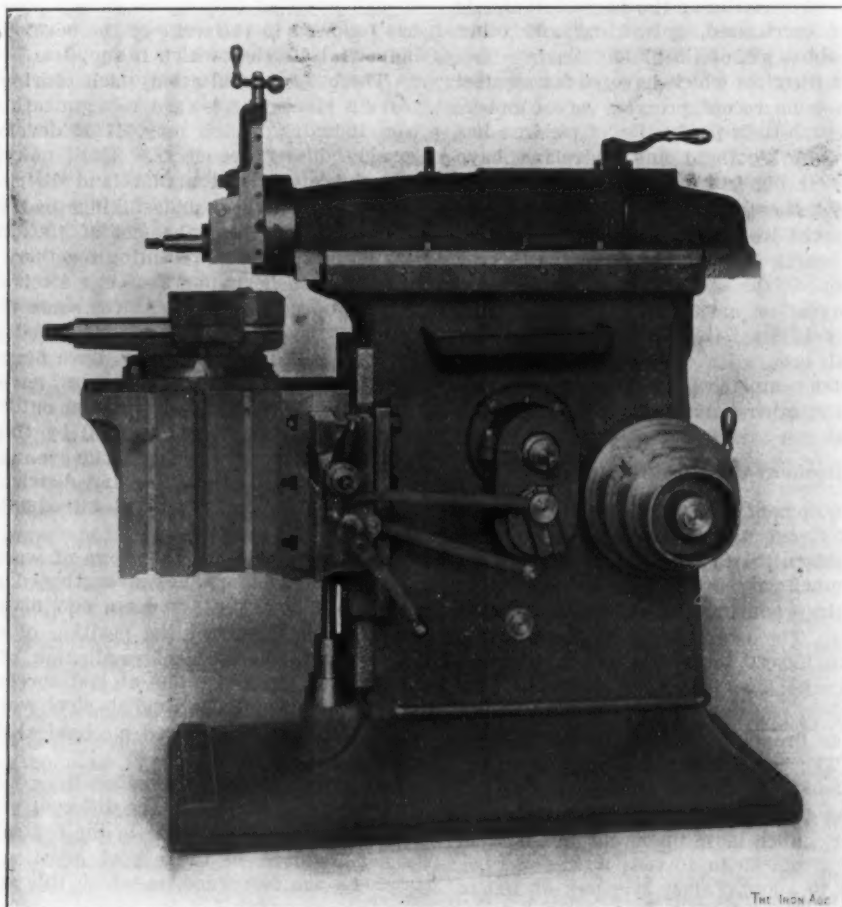


Fig. 1.—The New Queen City 16-Inch Shaper, from the Operator's Side.

portions, very heavy, and is reinforced internally at points to give it the greatest strength for resisting working strains. A very large bearing surface is given to the ram, this being 30¼ inches long by 10 inches wide. It will be noticed from the illustration in Fig. 1 that the slides supporting the ram are overhung, and to an extra extent on the front, so as to add to the stiffness of the tool at the point where it is most needed.

A rather novel design is characteristic of the ram, which is of arch construction, bringing the maximum section of metal in the part where the leverage is the greatest when the cutting tool is in its extreme forward position. It is also so arranged that the operator can alter the length of the stroke and the position of the ram without leaving the work and while the tool is in motion, if necessary. The cross rail supporting the table is another extremely heavy part. The front wearing surface is 9 inches across and the top wearing surface is 1½ inches, contributing to the maintaining of a permanent alignment of the table. A 21-inch cross traverse is possible, which is manipulated by a screw having a gradu-

holding the work solidly even when angle cuts are being taken. The base of the vise may be firmly bolted to either the top or sides of the table and the swivel is held to this base by two steel planer head bolts. The tool head swivel is held in the same manner. Both are graduated, and can be set quickly and accurately to any angle. The down feed screw for the head has a graduated collar to assist setting.

All flat wearing surfaces of the machine are scraped and tested on standard surface plates. They are extremely wide and are so gibbed as to allow for close adjustment in taking up wear. All column holes are unusually long and are bushed to enable maintaining the original centers. Careful attention has also been given in the providing of effective lubrication to all of the rubbing parts. All pinions and bevel gears are of steel, as are also the vise jaws and the bull wheel slides. The gears and T-slots are cut from solid stock. The wrench connections are hardened and the feed gears are incased. A large opening through the column under the ram makes it possible to keyseat shafts or similar work of any length.

Extra attachments, such as power down feed, concave attachment, tilting and revolving table, mold makers' vises, mandrels, index centers, &c., are furnished with the machine when so ordered.

Lake Iron Ore Matters.

DULUTH, MINN., August 29, 1904.—Rinaldo McConnell of Ottawa, Canada, has been doing considerable de-

Hunters Island, and that of R. H. Flaherty, a few miles east of Port Arthur, this indicates a marked revival in interest on the northern side of the international line, and the hope is expressed by many that this interest and increased exploration will be rewarded by the discovery of bodies of iron that shall be important. Mr. Flaherty's work is said to be proving the existence of a very considerable ore bearing formation, and as it lies near that of Mr. McConnell, the indications are for a possible ore

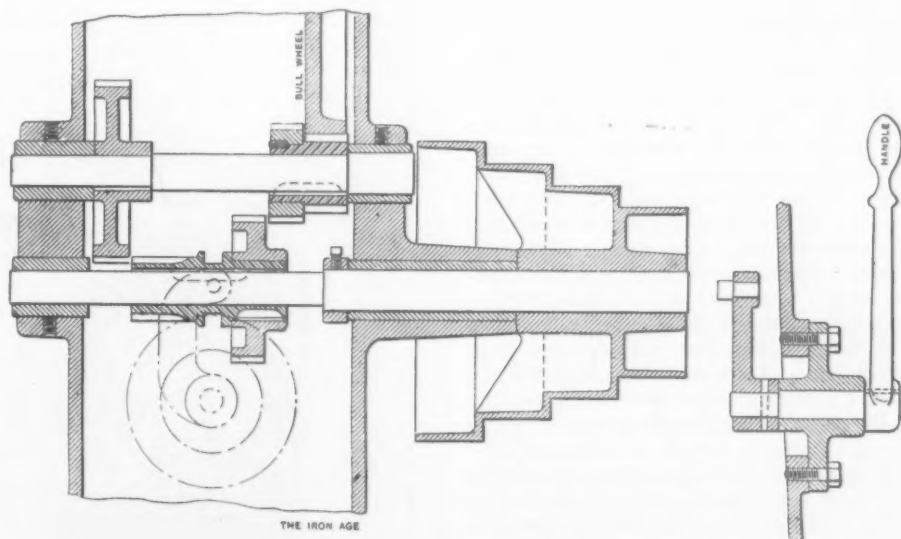


Fig. 2.—Detail of the Drive and the Mechanism for Effecting the Gear Change.

velopment work in the vicinity of Port Arthur, Ontario, and upon one of his properties has proved, it is claimed, over 4,000,000 tons of iron ore. The indications are favorable that this ore body extends a considerable distance, and the Canadian Iron Company, Limited, has been

bearing range of no small dimensions. The work of the International Iron Company is further to the west and south, and is in an area that has long been regarded as possibly valuable. All last winter tunnels were driven into the jasper and banded ores of the formation, and this summer a diamond drill has been placed there and has been boring for some months. It is stated by members of the company that the results of drill work so far have been encouraging and that recently the drill has been cutting ore. The Canadian Iron Company is largely owned in Ottawa, the International Company at Duluth, and Mr. Flaherty is at work on his personal account.

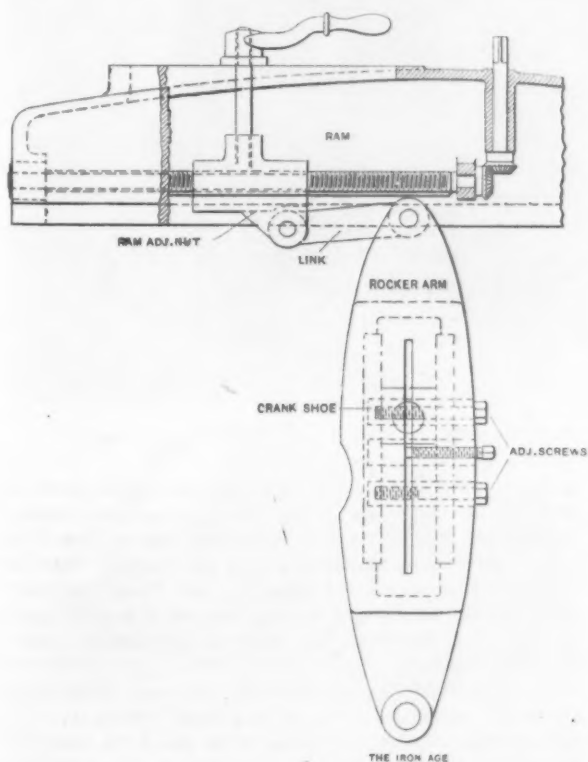


Fig. 3.—Detail of the Ram Reciprocating Mechanism.

organized with a capital of \$2,000,000 to develop lands adjoining. The company has done little work this year, but expects, so I am informed, to explore quite extensively between now and the next summer. R. W. De Morest of Sudbury is engineer for the company. In connection with the work of the International Iron Company on

August shipments by vessels owned and chartered by the United States Steel Corporation will amount to about 1,500,000 gross tons. In July they were that much, aside from chartered, season and wild tonnage. It is doubtful if the year's business holds as late into the fall as was expected, unless there is a quite decided change. It was figured that Steel Corporation ships would make at least two round trips in November, but it is questionable now if the barges do, and possibly not all the steamers may. Corporation shipments for the year will be under 10,000,000 gross tons, unless schedules are increased later. It is very hard to figure much more than 8,000,000 tons outside. Rates from the head of the lake are now at low ebb—so small a freight charge, in fact, that there is no profit to even good sized steel ships of modern design, and probably no very extortionate return to ships of the very largest classes. A freight of 65 cents a gross ton from Duluth to Lake Erie, out of which the ship must pay 19 cents a ton for unloading, leaves 46 cents net for the 1000-mile trip. For a time coal freights up were good, but they are falling off under the pressure of boats glad to get up cargoes, and this 46 cents means, in many cases, the entire income per ton for the full round trip. Steel Corporation ships have been after coal this year and have been carrying an immense amount of it.

An important change is to be made in methods of mining Grant, a large property belonging to Jones & Laughlins of Pittsburgh. It is to be stripped for milling. Heretofore all mining has been from underground by the caving system. The new plan will permit a much larger product. Grant is a big ore body without very heavy capping. The owners have placed a shovel and are now loading their stock preparatory to stripping.

Partly on this account they have closed down at Lincoln, their underground property at Virginia, Mesabi range, where they have within a few days let out 300 men. Their intentions were to mine Lincoln heavily this season, up to a product of 350,000 tons.

On Menominee range stock piled ore is going forward very fast. Great Western has shipped its large pile of basic ore, and the shovel is now attacking Lincoln pile, after which the entire surface ore will be cleaned up. At Crystal Falls a shovel is loading day and night and the mine is working underground to capacity. Lamont stocks have not been touched, neither has that at Armenia, where 25,000 tons are on hand. Tobin is shipping 2000 tons a day from mine and stock, and at Hemlock the large pile is melting away under the attack of a large shovel. At Mansfield and Bristol little is doing. From Iron Mountain an immense quantity of ore goes forward daily, from Chapin stocks and mine and from Aragon. Iron River mines are not especially active, but are reducing stocks. As a whole the situation on this range is much brighter than for some time, and there is reason to anticipate a large and continued operation during the coming winter.

At its Clifford mine Antoine Ore Company has been employing 130 to 140 men and has been shipping from 1000 to 1200 tons a day. This is a high average for the Menominee range, running from 9 to 10 tons per day for each man on the payroll. Clifford is an easy property to operate.

Volunteer mine, under lease to the Oliver Iron Mining Company, is quite active now, and the company is shipping as much of the stock pile as possible, for it is understood the lease is to be dropped at its expiration a short time hence. The mine has not been a success in any one's hands and will probably be idle some time.

D. E. W.

Extensions of the Goodyear Coal Road.—The Buffalo & Susquehanna Railroad Company, owned by the Goodyears, is actively pushing the extension of the road from Belmont, Allegheny County, N. Y., to Buffalo, to afford connection with the new plant of the Buffalo & Susquehanna Iron Company, and \$1,000,000 or more is to be expended by the railroad company in the establishing of extensive freight terminals at Buffalo. The Goodyears also contemplate an extension of the road to Pittsburgh and the heart of the Pittsburgh industrial district, thereby furnishing a market for the pig iron product of the new Buffalo plant, and opening a new avenue of traffic between Pittsburgh and Lake Erie. A further extension to Lake Ontario is also under consideration, the plans in this direction to be carried out by the purchase and reconstruction of the old Buffalo & Arcade Railroad, and the building of a new north and south line across the western portion of New York, having a water outlet on Lake Ontario for the export of coal to Canada.

The relative economy of hydraulic and electric mechanism for the operation of dock cranes has been thus stated: The hydraulic crane lifted 1210 tons of rails in seven hours, at a cost of 37 cents per 1000 foot-tons. The electric crane lifted 1225 tons in 5¼ hours, at a cost of 30 cents per 1000 foot-tons. The saving in cost of operation is thus about 20 per cent., while the saving in time is 25 per cent. for practically the same work.

Nine miles of pneumatic tubes for the Chicago post office were put into operation with appropriate inauguration ceremonies last week. These tubes connect the present temporary post office on the lake front with the leading railway termini and with several branch post offices. This service will be used exclusively for letter mail, and it is expected that the Illinois Tunnel Company will carry the bulk mail.

The Buffalo, Rochester & Pittsburgh Railroad and the Lackawanna Railroad have recently given orders to have all their steel cars treated with the copper process of metal preservative. The Niagara Railway & Mill Supply Company of Buffalo has the contract for furnishing the material.

The Willey Electrically Driven Grinders.

The accompanying illustrations show three electrically driven grinders in which the motor is incorporated in the machine proper. Fig. 1 is a water tool grinder; Fig. 2 a portable bench grinder, and Fig. 3 a center grinder. The tool girder has the driving motor and controller incased in the lower part of the housing, where it is completely protected from dirt and water. The frame is cast in one piece, and includes the seats for the wheel bearings, the water reservoir and the magnetic frame of the motor. Wide bearings with large wearing surfaces are provided for the wheel, made as nearly dust proof as possible, and self-oiling. A drawer easily removable, at the back of the machine is arranged to catch all sediment.



Fig. 1.—The Willey Water Tool Grinder.

A small centrifugal pump driven from a pulley on one end of the motor shaft delivers a constant stream of water over the wheel through adjustable nozzles which can be directed as desired or shut off entirely. The belt, not shown in the illustration, and pulleys are outside of the casing. The pump is protected so that grit cannot get into its bearings. The bowl is sufficiently large to catch the splashing water and return it to the reservoir. The motor is of the four-pole pattern, with form wound field and armature coils, slotted armature core, radial carbon brushes and self-oiling bearings. It is wound for either 110 or 220 volts direct current, and is capable of developing 1½ horse-power. The stopping and starting of the machine are effected through a vertical lever shown at the side. The tool is adapted to take a wheel 14 inches in diameter by 2 inches face. The total weight of the machine is 600 pounds.

Fig. 2 shows a portable bench girder, in which the motor is incorporated in the frame and entirely incased, all the electrical connections being on the inside where they are protected from injury. Current for driving the

motor may be taken from any convenient plug receptacle and conveyed by flexible cord to the location where the grinder is to be used. The nature of the work and the high speed at which the wheel is required to run make

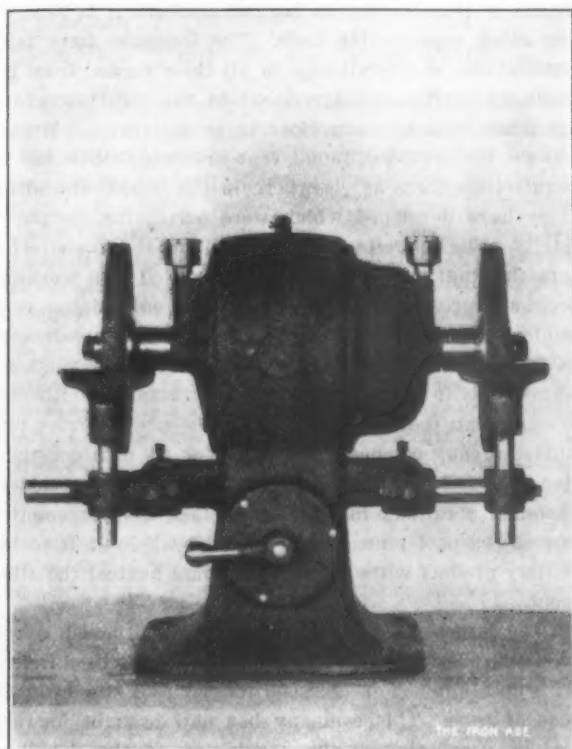


Fig. 2.—The Willey Portable Bench Grinder.

the matter of bearings one of considerable importance. It will be noticed in the engraving that lubrication is provided through grease cups in an accessible position. Speed regulating, stopping and starting are effected

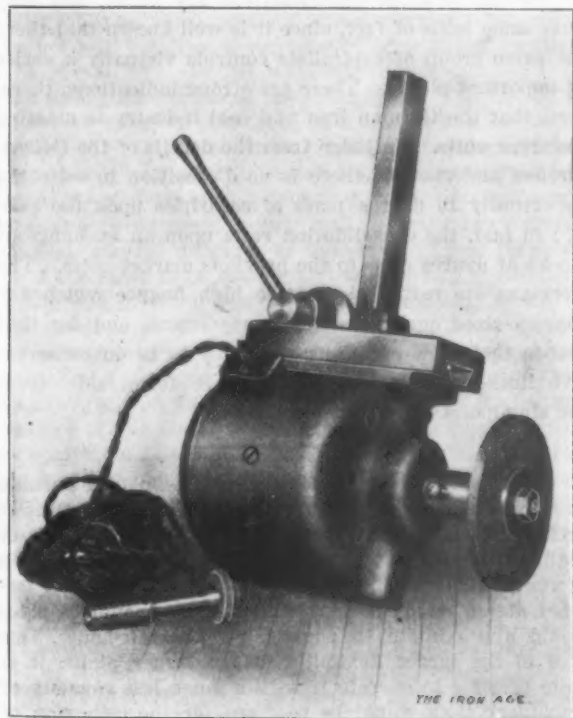


Fig. 3.—The Willey Center Grinder.

through the lever shown on the front of the base. This connects with a controller contained within the case, where it is well protected from dust and injury. The work rests are adjustable in any direction for grinding on the side or face of the wheels and for accommodating

the decreased diameters as the wheels become worn. The total weight of the machine fully equipped is 110 pounds, the length across the spindle is 17½ inches, the width at right angles to the spindle 12 inches, and the height over all 16 inches.

The machine shown in Fig. 3 is designed especially for grinding lathe centers, and by its use they can be kept in perfect order at very little expense of time. It is entirely self contained and has no loose parts to get lost or misplaced. Power is obtained through flexible cord from any convenient incandescent lamp socket. The tool is held during operation by clamping the supporting shank in the tool post of the lathe, and may be turned to grind the center at the desired angle. The wheel is traversed across the face of the center by the hand lever shown. The grinder is also adapted for grinding milling cutters, being in this case supported by the vise on the milling machine. A tooth rest is clamped to the table and the cutter is ground in place in the machine. It may also be used for surface grinding by attaching to the tool post of a shaper, or it can be used on a planer in the same manner. For internal grinding an extension arbor, carrying a small wheel, such as is shown to the left in the figure, is substituted for the large wheel, and holes up to ¼ inch in diameter may be ground. Three sizes of the machine are made, Nos. 1, 1½ and 2. No. 1, which is the one illustrated, has a slide movement of 1½ inches by means of the lever, and Nos. 1½ and 2 have a screw feed of 3 inches and 6 inches, respectively.

These grinders are part of a line known as the Willey electrically driven tools, and are manufactured by James Clark, Jr., & Co., of Louisville, Ky., who now have them in operation at their exhibit, Block 20, Electricity Building, at the St. Louis World's Fair. The Willey tools are sold in the West by William C. Johnson & Sons Machinery Company, St. Louis.

High Speed Centrifugal Pump Tests.

Tests of De Laval centrifugal pumps direct connected to steam turbines and electric motors and running at high speeds were recently made by J. E. Denton and William Kent of Syracuse, N. Y. Three types of pump were tested. The first was a single stage centrifugal pump designed to deliver 1700 gallons per minute against a head of 100 feet, when running at 1545 revolutions per minute, and driven by a 55 horse-power turbine. The efficiency ranged from 74.3 to 75.6 per cent. when delivering between 1398 and 1860 gallons per minute, and decreased with any increase or decrease of delivery beyond these limits. The duty of the set, when the turbine ran condensing, was from 60,000,000 to 61,860,000 foot pounds per 1000 pounds of steam, between the same limits.

A single stage pump, direct connected to a 20 horse-power electric motor, was the second one tested. It had a rated capacity of 1200 gallons per minute against a head of 45 feet, running at 2000 revolutions per minute. The efficiency was 71.4 per cent. with a delivery of 1403 gallons per minute, 75 per cent. with a delivery of 1133 gallons and 68.3 per cent. with a delivery of 790 gallons. The electrical horse-power varied from 20.11 to 17.88, the corresponding brake horse-power being 17.14 and 14.94.

A two-stage pump designed for high pressure was the third tested. This had a capacity of 250 gallons per minute against a 700-foot head, the first-stage pump being driven at 2050 revolutions per minute, with a 10 to 1 reduction from the shaft of a De Laval steam turbine and the second-stage pump being driven at 20,500 revolutions directly from the high speed shaft of the turbine. The duty of this pump was 48,880,000 foot pounds, at a head of 781 feet, with a delivery of 244 gallons per minute. This fell to 41,550,000 foot pounds for 328 gallons delivery under a 494-foot head, and to 18,630,000 foot pounds for 373 gallons against a head of 136 feet. The steam per horse-power per hour developed in the water ranged from 40.5 for highest power and highest head to 106.2 for lowest power and lowest head, the latter being about one-quarter of the highest.

All three pumps showed maximum efficiency under the designed conditions of delivery and lift.

The Iron Age

New York, Thursday, September 1, 1904.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEORGE W. COPE,	- - - - -	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.

The Boston office of *The Iron Age*, Walter C. English, manager, has been removed to Room 1004, Compton Building, 161 Devonshire street, a location within 100 yards of Washington street and 50 yards from the post office.

The Stockyards Strikers Defeated.

This has not been a good year for strikers, and able men at the heads of labor organizations are using their utmost efforts to curb the restless element and to keep their men at work until industrial conditions shall have assumed a shape where the demand for labor at least approaches the supply. Not so with men like Donnelly, who called the stockyards strikes in the first place after refusing the packers' offer to arbitrate, and who, after accepting the terms and sending his men back to work a week later, for a reason not explained, called them out again, without giving the packers an opportunity to carry out their side of the agreement. This agreement was that all striking employees were to be re-employed within 45 days, at the end of which time any men omitted were to have the right to appeal their cases to a Committee of Arbitration. Because the packers did not immediately employ all the strikers the first day—a thing manifestly impossible, because the receipt of cattle had been greatly reduced in the strike days preceding—this czar wired to his trusting subordinates in all plants in the country to quit work immediately. Up to this moment popular sympathy had been largely with the strikers, because the world at large felt none too kindly toward the packers. But this second strike turned the tide of public opinion and became the signal for a rush of unemployed to the packing plants. The strikers have been losing from that time to this, and even the Mayor of Chicago, with police power at his back, was unable to move the packers from the position taken after the second strike, that they were getting along very nicely and had lost all interest in the men who had seen fit to break a binding agreement.

The reign of ruffianism, picketing, assaults and murders that followed lost to the strikers the last vestige of public sympathy, and appeals for bread for the starving fell on unhearing ears, even within the ranks of unionism.

The last move on Donnelly's part, made late last week, was to send out notices calling for a conference of his men to determine whether they could not arrive at some basis agreeable to their former employers by which a portion at least of their number should be taken back. This is an acknowledgment of defeat, and a precursor to the rebuff that the committee will receive at the hands of the packers, if such a committee is ever sent.

Doubtless millions of dollars have been lost to stock raisers, packers, transportation companies and the public at large, and much suffering has been made the lot of the union men and their families, particularly the latter, all because a few leaders permitted their ambitions and their love of power to rush them into a false position.

Consolidation in Germany.

In the German iron and coal industries the inevitable trend toward actual consolidation is developing, and what is most important to those who must meet the producers of that country in neutral markets, it is proceeding along conservative lines. The Germans have tried associations and syndicates in all their forms, from the ordinary gentlemen's agreement to the rigid autocratic syndicate, which comes close to actual fusion. Human nature, however, has found vent in eccentricities and irregularities there as elsewhere in the world, and situations have developed which were perplexing, to put it mildly. The desire to control raw material and convert it into the final marketable product has led iron works to seek alliances with collieries, while coal mining companies have aimed to assure a market to themselves by taking an interest in iron works. The latter tendency seems likely to grow, since the arrangements of the Rhenish Westphalian coal syndicate under the new contract provide that any company can issue for its own consumption over and above that allotment. By buying out a large customer a colliery may therefore take his consumption out of the pool tonnage and add the whole of it to the colliery product without having it count against the allotment.

The largest of the companies in the Rhenish Westphalian coal and coke syndicates is the Gelsenkirchen, with an allotment of 7,698,000 tons of coal and 1,079,000 tons of coke. This company has now brought forward serious proposals for the acquisition of the Schalcker-Gouben und Huetten Verein and the Aachen Huetten Aktien Verein. The former has some colliery property, the Pluto mine, with an allotment of 1,000,000 tons of coal and 220,000 tons of coke, and owns seven blast furnaces and a number of foundries. The latter owns the famous Rothe Erde Works at Aix-la-Chapelle, with ore and furnace property in Luxemburg.

Rumors of other consolidations are afloat, and may have some basis of fact, since it is well known that there the same group of capitalists controls virtually a series of important plants. There are strong indications, therefore, that the German iron and coal industry is massing in larger units. To judge from the details of the Gelsenkirchen undertaking, there is no disposition to seize the opportunity to float a mass of securities upon the public; in fact, the consolidation rests upon an exchange of stocks at figures close to the previous market rates. The Germans are rather shy of the high finance which has characterized our consolidation movement, and for that reason their new creations are likely to be on conservative lines and therefore much more formidable, from the standpoint of their competitors.

It has recently been pointed out that a coal burning power plant of a capacity of 50,000 kw., with a radius of action of 50 miles, will burn something like 3 pounds of coal per kilowatt-hour, and that the average consumption of coal which would be found to exist in the small isolated plants which such a central plant would displace would approximate 10 pounds per kilowatt-hour. Due also to the larger flexibility of the larger plant, it is quite possible to operate it with a much less capacity of machinery than would be required for the collection of smaller plants. The displaced power might vary from 75,000 to as much as 150,000 kw., depending upon the limits of variability of the demand. Assuming that in each case the demand for power averages 50 per cent. of the ultimate capacity of the single plant, and that each plant is operated night and day, it follows that the saving of the larger plant over the many smaller ones will be represented by a consumption of $3 \times 25,000 \times 24 \times 365$

pounds of coal per year, as compared with $10 \times 25,000 \times 24 \times 365$. This amounts to a consumption of 328,500 tons, as compared with 1,095,000, the percentage of saving being no less than 70. The unavoidable line losses of the central plant would somewhat discount this saving.

A New Tin Plate and Sheet Plant.

A representative of *The Iron Age* recently visited the new tin plate and sheet mills being erected at Follansbee, on the Wheeling division of the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, 40 miles from Pittsburgh and 22 miles from Wheeling, W. Va., by Follansbee Brothers Company of Pittsburgh. This location is in the Pittsburgh district and takes Pittsburgh freight rates both east and west. The plant when completed, which will be early in September, will be one of the most complete tin plate and sheet mills in the country. The entire site secured for the plant and other purposes contains nearly 300 acres, 42 acres of which were set aside for the present mills and for future extensions, while about 100 will be given over to other manufacturing plants that may locate there, and 150 acres have been reserved for homes to be erected by employees of the plant, a number of dwelling and business houses being already finished, while others are under way. All the mill buildings are of steel frame and brick construction, and have been most substantially erected. Particular attention was given to securing light and ventilation, and in this respect the buildings are of ideal construction.

The Hot Mill Buildings.

Two main buildings of steel frame construction and corrugated siding, one of which is 90 feet wide by 440 feet in length and one 110 feet wide by 480 feet long, contain the hot and cold mill trains, the annealing and heating furnaces and the pickling machines. The hot mill consists of six tin mills, 26 x 28 inches and 26 x 32 inches in size, and two sheet mills, one being 26 x 36 inches and the other 26 x 42 inches. The hot mills are in two trains, four mills on a train, and are driven by a 2000 horse-power rope drive Corliss engine furnished by C. & G. Cooper Company of Mt. Vernon, Ohio. This engine is of particularly heavy construction, the engine wheel, sheave, shaft and fly wheel weighing 132 tons. The hot mill building is commanded by a 25-ton Pawling & Harnischfeger electric travelling crane and the cold mills by a 10-ton crane of the same make. The hot mills are served by seven cold mills, 22 x 36 and 22 x 42 inches in size. At one end of the hot mill are two large trimming shears built by the United Engineering & Foundry Company of Pittsburgh. The hot mill contains seven annealing furnaces of a new type designed by William Banfield, general manager of the plant. These furnaces are of the down draft design, and will be very economical in fuel and give the best results in annealing, which is so important in the production of high grade plates, which this concern proposes to make. The annealing boxes are all of cast steel, practice having shown that the wrought iron annealing boxes do not have the lasting qualities of the steel. Particular attention was given to the equipment in the pickling department, which contains two pickling machines of special design, one for black pickling and the other for white pickling. The plant is equipped with 16 heating furnaces of specially heavy construction and which have some new features.

The Tin House.

The tin house is a brick building 50 x 440 feet in size, and is equipped with one white pickling machine and ten tinning stacks, five on each side of the building. Eight of these are special stacks for the tinning of high quality tin and terne plates, while two are of the Thomas White type, for the cheaper grades of roofing and bright plates. A 5-ton Pawling & Harnischfeger crane commands this building from end to end. Natural gas is used throughout this department.

The boiler house is 50 x 120 feet in size, and contains four batteries of boilers of 500-horse power each, and which were installed by the Stirling Company of Barberton, Ohio. The boilers are coal fired. There is also an

electric plant contained in a brick building 30 x 60 feet in size, and which contains two 250-horse power Crocker-Wheeler dynamos direct connected to two 250-horse power engines furnished by the Harrisburg Foundry & Machine Company of Harrisburg, Pa. The electric plant will furnish light and power for the various buildings, while all shears are motor driven. There is also a machine shop with a full equipment of iron working tools, and a forge with steam hammer. A brick building, 25 x 60 feet in size, has been erected for storing palm oil, the floor being 18 inches below the floor level of the other buildings. This building is somewhat isolated, and was erected with the object in view of securing the best possible protection against fire.

The receiving and shipping facilities of the plant are excellent. A railroad track runs between the hot mill building and the power house, and another between the cold mill side of the main building and the tinning house, while additional tracks enter the several buildings, so that all material can be most economically loaded and unloaded. The plant is located directly on the bank of the Ohio River, but is above flood mark, and a very large part of the in and out bound tonnage of the mill will be received and delivered by river.

The erection of the plant has been under the direct supervision of William Banfield, general manager, who has had long experience in the manufacture of tin plate and sheets, first at Leechburg, Pa., then at Irondale, Ohio, and for the past five years as district manager of the American Sheet & Tin Plate Company. The entire mill organization is directed by superintendents of experience in each department. The steel buildings were erected by the Fort Pitt Bridge Company of Pittsburgh, with works at Canonsburg, Pa., while the hot and cold mills and considerable other equipment was furnished by the Wheeling Mold & Foundry Company of Wheeling, W. Va. The concern has drilled two artesian wells on its own property, which furnish 800 gallons per minute of the purest water.

The Follansbee Brothers Company is a corporation with a capital of \$1,000,000 and for several years has operated a dipping plant in Allegheny, Pa. As soon as the new plant at Follansbee has been completed the equipment of the present works in Allegheny will be transferred to Follansbee. The output of the plant will be the highest qualities of roofing and bright tin plates and also special finished sheets. The entire output will be handled by Follansbee Brothers Company, which maintains offices and large warehouse at Third avenue and Liberty street, Pittsburgh. The officials of the company are: B. G. Follansbee, president; William U. Follansbee, secretary and treasurer, and William Banfield, general manager.

In connection with this enterprise the Brooke County Improvement Company has been organized, which is directly owned and conducted by Follansbee Brothers Company. It will have charge of the real estate operations and has already sold a large number of home sites in the tract of 150 acres set aside for that purpose. Many of the men who will be employed in the plant have erected homes and others are preparing to do so. Within a short time an electric street car line will be run directly through the residence property of the Brooke County Improvement Company, giving quick services between Steubenville and Wheeling. This line when completed is expected to assist very materially in the development of the property to be utilized for residence and business purposes.

The Niagara Falls Power Company's report for the fiscal year ending June 30, 1904, shows the following:

Gross earnings.....	\$1,126,423
Expenses.....	214,530
Net earnings.....	\$911,893
Other income.....	114,936
Total net income.....	\$1,026,829
Total fixed charges.....	792,560
Balance.....	\$234,269
Improvements.....	74,331
Surplus.....	\$159,938
Previous adjusted surplus.....	223,223
Total surplus.....	\$383,161

Canadian Pig Iron Statistics.

The American Iron and Steel Association has received direct from the manufacturers the statistics of the production of pig iron in Canada in the first six months of 1904. The figures show a decrease as compared with either of the two halves of 1903, as will be seen by the following table, which gives the production by fuels, in gross tons, in half-yearly periods:

Fuel used.—Gross tons.	First half of 1903.	Second half of 1903.	First half of 1904.
Coke	123,500	124,405	111,840
Charcoal	9,430	8,083	8,803
Totals	132,930	132,488	120,643

The decrease in production in the first half of 1904 as compared with the first half of 1903 was 12,287 tons, or a little over 9 per cent., and as compared with the second half of 1903 it was 11,845 tons, or a little less than 9 per cent. Of the total production in the first half of 1904 35,291 tons were basic pig iron, against 69,325 tons in the first half of 1903 and 57,567 tons in the second half of that year. A small quantity of Bessemer pig iron was produced in the second half of 1903, but no Bessemer pig iron was made in the first half of 1903 or the first half of 1904.

The unsold pig iron held by Canadian manufacturers on June 30, 1904, none of which was intended for their own consumption, amounted to 36,868 gross tons, as compared with 19,168 tons on December 31, 1903, and 13,585 tons on June 30, 1903. Of the unsold stocks on June 30, 1904, a little less than 4000 tons were made with charcoal, the remainder being coke iron.

On June 30, 1904, Canada had 15 completed blast furnaces, of which six were in blast and nine were idle. Of this total 11 were equipped to use coke and four to use charcoal. In addition one coke furnace was being built on June 30, 1904, and one coke and one charcoal furnace were partly erected but work was suspended. During the first half of 1904 the total number of furnaces in Canada actually in blast for the whole or a part of the period was ten, of which seven used coke and three used charcoal. The number of furnaces idle during the whole period was five, of which four used coke when last in blast and one used charcoal.

The Dominion Iron & Steel Company, Limited, of Sydney, N. S., had three of its four furnaces running during the first six months of 1904, although all four were idle on June 30. It expected to blow in two of its idle furnaces on August 15.

The Londonderry Iron & Mining Company, Limited, of Londonderry, N. S., had one of its two furnaces in blast on June 30.

The Nova Scotia Steel & Coal Company, Limited, of New Glasgow, N. S., operated its Ferrona Furnace, at Ferrona, N. S., for 180 days during the first six months of 1904. The furnace was idle on June 30 and will not be blown in for some time. The new furnace which the company is erecting at Sydney Mines, Cape Breton County, N. S., will probably be completed soon. It will be known as the Sydney Mines Furnace, and will have an annual capacity of about 75,000 tons of foundry and basic pig iron.

The Canada Iron Furnace Company, Limited, operated its charcoal furnace at Radnor Forges P. O., Quebec, for 143 days during the first half of 1904. Its Midland Furnace, at Midland, Ontario, which uses coke for fuel, ran for 142 days. Both furnaces were running on June 30.

Officials of the Westinghouse Air Brake Company of Pittsburgh and the Pennsylvania Railroad witnessed last week a practical test of the new triple air brake valve, which is owned by the Westinghouse Air Brake Company. Fifty Pennsylvania box cars and engine No. 1891 were fitted up with the new appliance, and upon a straight track between Trafford City and Pitcairn the device was subjected to severe tests. The train was driven at from 15 to 25 miles an hour and was stopped within from one and a half to four car lengths.

Iron Imports and Exports in July.

The July figures published by the Bureau of Statistics of the Department of Commerce and Labor show that our exports of iron and steel are keeping close to the highest recent records. The exports for July for which quantities are given amounted to 108,039 gross tons, against 26,933 tons in the corresponding month of last year. For comparison with preceding months the following figures are of interest: June, 119,179 tons; May, 107,646 tons; April, 75,747 tons; March, 89,332 tons; February, 57,558 tons; January, 49,880 tons. The figures in detail for the month and seven months are given in the following table:

Exports of Iron and Steel.

Commodities.	July.		Seven months.	
	1904.	1903.	1904.	1903.
Pig iron	4,611	1,739	26,324	9,196
Scrap	3,135	273	14,252	2,579
Bar iron	2,020	309	17,415	12,414
Wire rods	771	1,896	8,445	16,288
Steel bars	851	3,035	14,063	12,608
Billets, ingots, blooms ..	35,904	153	208,072	805
Hoop, band, scroll	84	51	1,912	1,187
Iron rails	4	93	1,609	139
Steel rails	40,300	649	174,547	4,753
Iron sheets and plates ..	268	1,138	2,664	2,836
Steel sheets and plates ..	3,698	501	16,706	7,682
Tin plates andterne plates	253	2	3,746	164
Structural iron and steel	4,921	3,185	26,157	19,145
Wire	7,539	8,432	66,901	62,551
Cut nails	1,372	880	6,077	4,886
Wire nails	2,026	4,434	16,843	18,273
All other, including tacks	282	163	1,648	1,296
Totals	108,039	26,933	607,381	176,297

The two heaviest items, it will be observed, are billets, which include sheet bars, and steel rails.

The total value of the exports of iron and steel and all manufactures thereof, not including ore, was \$23,386,637 during the first seven months of 1904, as compared with \$19,243,794 during the corresponding period of 1903 and \$19,104,108 during the first seven months of 1902.

The imports of iron and steel show a further decline. The details for those articles for which we possess figures as to quantities are as follows:

Imports of Iron and Steel.

Commodities.	July.		Seven months.	
	1904.	1903.	1904.	1903.
Pig iron	4,090	38,046	48,102	490,497
Scrap	314	3,588	8,894	66,476
Bar iron	3,115	3,465	13,129	26,105
Rails	3,581	3,086	34,029	75,730
Hoop, band and scroll	265	227	1,233	891
Billets, slabs, bars, &c., steel in forms n.e.s. ..	879	33,070	7,462	209,301
Sheets and plates	156	1,154	3,247	5,638
Tin plates andterne plates	7,340	5,178	41,668	30,657
Wire rods	1,428	1,627	9,515	12,031
Wire and articles made from	334	611	2,560	2,895
Structural iron and steel*	355	819	4,796	819
Chains	27	72	242	278
Anvils	7	47	91	131
Totals	21,891	90,990	174,968	921,448

* Included in "All other" prior to July 1, 1903.

The total value of the imports of iron and steel and manufactures thereof for July, 1904, amounted to \$1,905,806, as compared with \$3,529,676 in July, 1903. For the first seven months the total value of imports of iron and steel was \$12,998,003 for 1904, \$28,849,425 for 1903 and \$19,333,446 for 1902. All these figures of imports do not include iron ore, the tonnage of which for the first seven months was 198,868 tons in 1904, 569,895 tons in 1903 and 682,490 tons in 1902.

The Hoop Mill Situation in the Youngstown District.—The Carnegie Steel Company having been unable to come to a satisfactory settlement in regard to wages to be paid in its hoop mills at Warren, Girard and the Upper and Lower mills at Youngstown, has decided to operate these mills nonunion in the future. When the

dispute first arose the Carnegie Steel Company offered to pay the base rate of \$5 for puddling, but this was refused by the Amalgamated Association. It was proposed to reduce the high priced rollers and finishers, so that their wages would be from 25 per cent. to 43 per cent. lower, while the wages of one man, who received the highest price for his labor, were to be reduced 71 per cent. Last week the Carnegie Steel Company issued an official statement regarding the wage troubles at its hoop mills, and which is as follows: "There are 2150 men employed in the mills affected by the proposed cut. These mills are as follows: Warren, Girard and Upper and Lower Union at Youngstown. Of this total number but 155 men's wages are reduced, leaving 1995 out of 2150 not affected. Four classes of workmen are concerned—viz., rollers, heaters, roughers and rundowns, the proposed reduction being: Total employees, 2150; 1 man, 71 per cent.; 11 men, 43 per cent.; 11 men, 27 per cent.; 30 men, 40 per cent.; 72 men, 35 per cent.; 30 men, 25 per cent. One hundred and fifty-five men affected; 1995 men not affected. Note should be made of the fact that the wage change affects only work on steel. For puddling and finishing iron the company offered to pay Amalgamated Association scale prices. Seven per cent. of the total employees are reduced, and with the cut in force the range of wages for these employees will be from \$3 to \$15 per day." It may be stated that while the Warren, Girard and Youngstown hoop mills are not as yet being operated to full capacity, the number of men at work is being steadily increased, and within a short time the Carnegie Company expects to be operating these plants in full.

MANUFACTURING.

Iron and Steel.

Another sheet mill is to be added to the plant of the Empire Iron & Steel Company, Niles, Ohio.

The Newport Rolling Mill, Newport, Ky., better known at home as the Andrews Bros. Rolling Mill, has resumed in all departments, with bright prospects for a long continuous run. On Monday, August 22, the puddling furnaces, bar mills and five sheet mills were started, and on Monday, August 29, the remaining five sheet mills and balance of the plant were put in operation.

The N. & G. Taylor Company, Philadelphia, Pa., probably the largest manufacturer of high grade roofing tin in the United States, of which it has long made a specialty, reports all departments of its Philadelphia works in full operation, employing 26 tinning stacks. Special attention is given to the quality of its black plate, no Bessemer steel being used in any of its brands of tin plate.

Rod Mills Nos. 2 and 3 of the Illinois Steel Company, at Joliet, Ill., resumed operations August 22, employing about 400 men. The opening of these mills leaves the plant in operation in every department.

The Hinkle Furnace of the Ashland Iron & Steel Company, Ashland, Wis., was put out of blast August 2, after a continuous run of three years and six months. A complete new lining will be put in and general repairs made. D. Lamond & Son of Pittsburgh, Pa., have the contract for a new C. H. Foote stove, 16 x 70 feet, which will be added to the present stove equipment. Wm. Wilkins, recently with the National Tube Works at Wheeling, W. Va., has been appointed manager of this company in place of Lewis E. Dunham, resigned. Mr. Wilkins has had wide experience in blast furnace management in all its departments. In the wood alcohol department needed repairs will be made. A new laboratory is being constructed with modern appliances for organic as well as inorganic work.

The Old Meadow works of the American Sheet & Tin Plate Company, at Scottsdale, Pa., which have been closed down since July 2, are expected to resume operations in full about September 1. This plant contains six sheet and pair furnaces, five annealing furnaces and six hot and two cold mills, the annual capacity being 17,000 net tons of black sheets, running triple turn.

The entire plant of the Standard Tin Plate Company, at Canonsburg, Pa., is now running full in all departments, giving employment to about 300 men.

Hannah furnace of Republic Iron & Steel Company, at Youngstown, Ohio, which has been idle for some time, has again started up.

The Sligo Iron & Steel Company, Pittsburgh, has started up its mills at Connellsville, Pa., after a shut down of two weeks for repairs and additions. The report that the works had been closed for two months is untrue. This concern manufactures high grade bar iron, sheets and plates.

Blast furnace "B" of the Carnegie Steel Company, at Bessemer, was put in operation last week. Of the 11 stacks at the Bessemer plant, only furnaces "E" and "G" are idle, which were taken off about three months ago. Furnace "E" is to go on as soon as repairs now under way are finished and furnace "G," which is also being repaired, is expected to be ready for blast in the latter part of September.

Stack No. 1 of the Carnegie Steel Company, at Sharon, Pa., has started up after being idle a number of months.

The Monongahela Iron & Steel Company, Pittsburgh, operating a rolling mill plant at West Homestead, has been unable to come to a satisfactory agreement with the Amalgamated Association in regard to wage scales for its plant and has decided to operate its works nonunion in the future. The concern will employ nonunion men, but will pay the Amalgamated scale of wages, refusing, however, to sign any wage scales.

On Sunday, August 28, the 33 and 119 inch and the converting mills in the Homestead Steel Works of the Carnegie Steel Company went on double turn. This leaves only the 84-inch mill idle in this plant, which is undergoing repairs.

The Cambria Steel Company's No. 1 blast furnace, at Johnstown, Pa., which had been out of operation for three weeks for repairs, was put in blast this week. No. 4 furnace will be razed and a modern blast furnace built in its place. The work of tearing down the old furnace was begun this week.

The two new additions to the bridge shops of the Pennsylvania Steel Company, at Steelton, Pa., are almost completed. While the remainder of the plants are working on slack orders the bridge shop continues very busy. Two large contracts were booked within the past week.

The Chesapeake Nail Works, Harrisburg, Pa., were closed this week after a long run. Lack of orders is the cause.

The Central Iron & Steel Company, Harrisburg, Pa., is preparing to put in operation another furnace of its new open hearth department.

The Wright Wire Company, Worcester, Mass., is increasing the capacity of its works at Palmer about 1000 tons of finished fine wire per year by the installation of additional machinery and the erection of new buildings. The improvements include an 8-ton hydraulic crane, new iron floor in the annealing department, two new annealing furnaces with a daily capacity of 8 tons, addition to fine wire drawing department of eight more drawing frames, small addition to main wire mill for two more heavy drawing frames, and a new storehouse. The company is building and installing the machinery itself.

The Leechburg works of the American Sheet & Tin Plate Company, at Leechburg, Pa., which has been closed for about a month, started up on Monday night, August 29. The plant contains ten hot mills and four cold mills, the annual capacity being 32,500 tons of black sheets, running triple turn.

Sharpsville furnace of the Sharpsville Furnace Company, at Sharpsville, Pa., which has been idle for several months, will be started up within a week. The furnace is a small one, 65 x 15 feet in size, was remodeled in 1897 and has an annual capacity of 72,000 tons.

The Republic Iron & Steel Company's Atlantic furnace, at New Castle, Pa., is ready for starting up and will be put in blast some time this fall.

The American Automatic Oil Can Company, with a capital of \$25,000, has begun business at New Castle, Pa. George Greer, local manager for the American Tin Plate Company, is one of the directors and heaviest stockholders. Charles Greer is the president.

The New Castle works of the Carnegie Steel Company, at New Castle, Pa., have started up again after being closed about a week. A new blast furnace which has just been completed by the Carnegie Steel Company at New Castle, has also been started. A second new blast furnace is under erection and will be ready for operation early in October. Each of these stacks has a daily capacity of about 500 tons.

General Machinery.

The motor driven grinder business of the Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., is steadily increasing. Among the orders recently booked are four No. 4 and one No. 3 wet tool grinders and two floor grinders, all motor driven, for the Brooklyn Navy Yard, and one No. 6 under driven floor grinder for the Brown Cotton Gin Company, New London, Conn.

The Rochester Railway Company, Rochester, N. Y., has purchased a 5-acre site on Main street, where new car barns capable of holding 400 cars will be erected. The new buildings will be used also for light repairs, but the heavy repair work will be continued at the main shops on St. Paul street.

The Calumet Machine Company, Marquette Building, Chicago, contemplates the erection of a foundry and machine shop in or near Chicago, but selection of a site and definite plans have not been perfected.

The Oregon Plating & Machine Works has just been incorporated at Oregon, Ill. W. E. Cleveland is president; J. O. Petty, vice-president and superintendent; Charles M. Gale, secretary and treasurer, and these with John Purves and C. D. Etnyre are the directors of the company, which is occupying a

flouring mill on the east side of the river, which has been remodeled and the necessary machinery installed.

The Des Moines Bridge & Iron Works, Des Moines, Iowa, has leased the tract of land now occupied by its plant, and considerable additional property, making a total of about 6 acres. On the newly acquired land the company will erect several new buildings, largely increasing the capacity of its plant. It will be some time before the company will be in the market for machinery and other equipment for the new shops.

Don F. Smith has been appointed receiver for the Mahle Boring Machine Company, Corry, Pa., with offices in Cleveland, Ohio. The capital stock of the concern was \$250,000. C. W. Wason, a creditor for \$26,794.67, petitioned the courts for a receiver.

Power Plant Equipment.

The Maud S. Wind Mill & Pump Company, Lansing, Mich., recently purchased the gasoline engine business of Richmond & Holmes, St. Johns, and will continue to manufacture its engines in sizes 2½, 5, 9 and 12 horse-power. The 2½ and 5 horse-power sizes are upright and the 9 and 12 horizontal. The Maud S. Company has leased temporary quarters, but expects to put up a modern equipped factory before spring.

The Model Gas Engine Works has been incorporated at Auburn, Ind., with \$250,000 capital stock. The directors are Max B. Fisher, John W. White and Edward A. Myers.

The Chandler & Taylor Company, Indianapolis, has sold to Chas. M. Schwab, for his New York mansion, three inclosed, high speed, automatic engines, which will be used for the lighting plant.

The city of Youngstown, Ohio, recently placed contracts for power plant equipment with different concerns, as follows: William Tod Company, engines and pumps, \$9400; Massillon Iron & Steel Company, 400 feet 56-inch and 10 tons 24-inch flange pipe, \$2660.55, and Stirling Roller Company, two boilers, \$4239, and 200 horse-power boiler, \$5769.

Foundries.

The Economy Foundry, at Syracuse, N. Y., has been sold by the International Heater Company to the Central Iron Works, a new corporation, for about \$30,000. The plant, which has been closed for 16 months, is being extensively repaired preparatory to putting it in operation September 10. About 100 hands will be employed at the start. The company is composed of Clarence I. Markham of New York, and William H. Brown and Ernest R. Markham of Syracuse. Mr. Brown will be general manager.

The American Car & Foundry Company is to build an extension to its plant at St. Louis, Mo., part of which is to be used for storage purposes.

The Electric Steel Casting Company has been incorporated at Matthews, Ind., with \$50,000 capital stock, by Guy S. Rinebolt, Matthews; Philip Hughes, Johnstown, Pa.; Philip Angston and W. K. Gore, Chicago.

The Eagle Foundry Company has been incorporated at Muncie, Ind., with \$5000 capital stock. The directors are J. D. Ross Crozier, Harley D. Hartley and Harry Rhoads.

The Rest Mfg. Company, Philadelphia, is preparing to remove its brass foundry from Philadelphia to West Pittsburgh, the new town one mile south of New Castle. The buildings will be erected at once. The main building will be 390 x 600 feet, and will be constructed of brick and cement. It is expected that the plant will be in operation by January 1, 1905. The product will be brass valves, fittings and machined work in brass, steel and iron.

Bridges and Buildings.

The Decatur Bridge Company, Decatur, Ill., has been awarded contract for a steel bridge at Peru, to cost \$7800.

Hardware.

The Alaska Freezer Company, Winchendon, Mass., is erecting a new foundry 40 x 72 feet.

A. L. Henry has purchased Wm. Helfenberger's two-story brick manufacturing building at Senate avenue and South street, Indianapolis, and will install a plant for the manufacture of rural mail boxes.

The Twin Rake Mfg. Company has been incorporated at Ladoga, Ind., with \$20,000 capital stock. A. F. Kyte, president; H. E. Daugherty, vice-president; H. W. Brissenden, secretary; A. M. Scott, treasurer; G. W. Anderson, manager.

The Bridgeport Hardware Mfg. Company of Bridgeport, Conn., will shortly begin the erection of a new plant. The main building will be of brick, 104 x 183 feet, two stories. There will also be a frame building about 50 x 75 feet, which will be used for drop forging, hardening and tempering. The new plant will be completely equipped with the latest improved machinery and modern up to date power plant, 150 horse-power engines and boilers. It will give the company about three times the floor space it had before the fire, and it will be in a position to take care of 100 per cent. more business than formerly. It has a number of new articles which it proposes to put on the market as soon as possible, as it is intending to add materially to its line of hardware specialties. It is increasing also its facilities for manufacturing nail pullers, as this part of the business has

increased greatly within the last two or three years. In addition to the demand from the trade in this country the company is marketing large quantities abroad.

Miscellaneous.

E. B. Badger & Sons Company, Boston, Mass., recently filled a contract awarded them by the Navy Department for 1200 Badger fire extinguishers for the different navy yards of the United States.

The York Woodworking Company, York, Pa., recently organized with a capital stock of \$40,000 for the manufacture of building material, hard wood interior finish, bank and office fixtures, &c., has installed a new plant. The wood working machinery was furnished by the H. B. Smith Machine Company, Smithville, N. J.; American Woodworking Machinery Company, New York, and Bentel & Margendant Company, Hamilton, Ohio. The incorporators are Henry George, James L. Menough, George Riedel, John Riedel and Charles H. George.

The Perkins Roofing Company, 235 Lake street, Chicago, is successor to J. L. Perkins & Co., who failed recently. Robert R. Robertson, formerly secretary of J. L. Perkins & Co.; Wm. F. Mulhall, a clerk for the same company, and David Jetsing, an attorney, are given as incorporators.

The C. M. Plarr Mfg. Company has been incorporated at Buffalo, N. Y., capitalized at \$25,000, to manufacture jewelers' machinery. Directors: Charles M. Plarr, Philip H. Danner and Thomas H. Noonan.

Subcontracts for Carnegie Institute.—At Pittsburgh, on Monday, August 29, seven large subcontracts for work on the addition to Carnegie Institute were placed by William Miller & Sons Company, which firm secured the entire contract for the new building on July 8 last for \$2,591,993. The subcontracts placed are as follows: Thomas W. Irwin, Allegheny, skylights and sheet metal, \$108,000; George H. Soffel Company, plumbing, \$29,000; William Miller & Sons, Rochester, Pa., interior finishing, \$48,000; Chamberlain Metal Weather Strip Company, Pittsburgh, weather strips, \$1500; Beaver Valley Sand Company, Beaver Falls, Pa., 8000 tons rubble stone, \$9600; B. F. Young Company, marble work, \$650,000; Carnegie Steel Company, structural steel, \$306,000. In addition to these contracts the contracts for material in the power house were awarded. The interior work will be done by William Miller & Sons of Rochester, Pa., and Thomas W. Irwin secured the sheet metal contract. The remainder of the steel will be furnished by the Carnegie Steel Company.

Machinery Day at the World's Fair.—Saturday, September 10, will be Machinery Day at the World's Fair. On that day every movable piece of apparatus in the Machinery Building, including steam turbines, steam engines, gas engines, machine tools, wood working and grinding machinery, conveying and power transmitting apparatus, &c., will be in operation. It will be an unusual opportunity for those interested in things mechanical to study the exhibits at work or turning out their product.

W. J. Gilthorpe, grand secretary-treasurer of the Brotherhood of Boiler Makers and Iron Ship Builders, has issued an official letter to the members of this order, wherein he states that the large number of strikes in which the Brotherhood is engaged and the inadequacy of present resources to meet present needs have compelled him to request the Council to take the matter into consideration and recommend a remedy. He reports that 35 boiler makers' lodges and 14 helpers' lodges are on strike, and there are in his office awaiting payment demands of 3113 boiler makers and 818 helpers, which will require something in the neighborhood of \$24,427 to pay. He suggests that inasmuch as the Council approved the strikes, it must secure the money with which to pay the strikers. The Council, in reply to this, directed the grand secretary-treasurer to submit to a vote of the lodges for their approval a proposition to amend the constitution of the Grand and subordinate lodges increasing the dues of members, which will be taken up at once.

Chester A. Griswold of Troy, N. Y., will succeed H. C. Wicker as general manager of the Dillon-Griswold Wire Company of Sterling, Ill.

The Iron and Metal Trades

As we go to press the Beam Association is in session. If the programme of the leading members is carried out there will be a reduction in the price of Beams and Structural Material of from \$5 to \$6 per ton, from the base of 1.60c. per lb., Pittsburgh. It is known that the mills have reached an understanding about prices for fabricated material, so that a safer basis is reached in that respect. The new price for fabrication has already gone into effect, and while it temporarily checked business, that effect has now worn off.

The leading outside new maker of Beams has not joined the association as yet, but it is understood that this producer will act in harmony with the association in any case.

There is to be held to-day also a meeting of the Plate Association, at which lower official prices will probably be decreed. Just how much of a reduction from the base price of 1.60c., at Pittsburgh, will be agreed upon it is difficult to foretell, because opinions differ somewhat widely. Some important interests are reported as favoring so radical a measure as a cut to 1.25c., but in any case \$5 per ton will be probably accepted.

Until the exact measure of the cuts is known it is difficult to gauge their probable effect upon the trade. It is hardly likely that it will stimulate buying until the strength of the market under the new conditions is thoroughly tested.

The reductions will put an end to a thoroughly false situation, and that in itself is a step in the right direction. We do not believe that any extravagant expectations are entertained by the great mill interests of any very marked stimulating of the demand. That is not looked forward to before spring. But the trade is on a sounder basis.

It is regarded as probable that, in line with the same general policy, there will be an early reduction of \$1 to \$2 a ton on Steel Bars, and that prevailing conditions will be frankly accepted by an official reduction in the price of Billets to a \$19 to \$20, base.

When that has been accomplished, the new prices from Pig Iron to the various finished forms will be in harmony and one serious element of uncertainty is removed.

The only branch in which prices are out of line is in Standard Steel Rails. These, it is expected, will be dealt with at a meeting of the manufacturers, which will probably be held early in October.

Aside from sales of Low Phosphorus Pig Iron in the East, aggregating about 9000 to 10,000 tons, no very important transactions have taken place in Pig Iron. The prospects of an early resumption of work at the collieries of the Birmingham district are becoming less favorable.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Sept. 1, Aug. 24, Aug. 3, Sept. 2,
1904. 1904. 1904. 1903.

FIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$14.25	\$14.25	\$14.25	\$16.50
Foundry Pig No. 2, Southern, Cincinnati	12.00	12.00	12.00	14.75
Foundry Pig No. 2, Local, Chicago	13.50	13.25	13.25	16.50
Bessemer Pig, Pittsburgh	12.50	12.70	12.85	17.35
Gray Forge, Pittsburgh	11.75	11.85	11.85	15.50
Lake Superior Charcoal, Chicago	14.75	15.00	14.50	19.00

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	21.00	21.00	23.00	27.00
Steel Billets, Philadelphia	24.00	24.00	24.00	28.00
Steel Billets, Chicago	22.00	22.00	22.00	28.00
Wire Rods, Pittsburgh	28.00	28.00	28.00	35.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	10.50	11.00	10.00	14.50
O. Steel Rails, Philadelphia	11.75	11.75	11.50	16.50
O. Iron Rails, Chicago	15.75	15.75	15.00	18.00
O. Iron Rails, Philadelphia	15.50	15.00	13.75	19.00
O. Car Wheels, Chicago	11.00	11.00	11.00	21.00
O. Car Wheels, Philadelphia	12.00	12.00	10.50	19.00
Heavy Steel Scrap, Pittsburgh	11.50	11.50	11.00	19.00
Heavy Steel Scrap, Chicago	9.50	9.50	9.00	14.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.48½	1.48½	1.48½	1.60
Common Iron Bars, Chicago	1.35	1.35	1.30	1.55
Common Iron Bars, Pittsburgh	1.30	1.30	1.30	1.65
Steel Bars, Tidewater	1.49½	1.49½	1.49½	1.70
Steel Bars, Pittsburgh	1.35	1.35	1.35	1.60
Tank Plates, Tidewater	1.73½*	1.74½	1.75	1.78
Tank Plates, Pittsburgh	1.60*	1.60	1.60	1.60
Beams, Tidewater	1.74½*	1.74½	1.74½	1.73½
Beams, Pittsburgh	1.60*	1.60	1.60	1.60
Angles, Tidewater	1.74½*	1.74½	1.74½	1.73½
Angles, Pittsburgh	1.60*	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.30	1.32½	1.32½	1.80
Skelp, Sheared Steel, Pittsburgh	1.32½	1.35	1.32½	1.87½
Sheets, No. 27, Pittsburgh	2.00	2.00	2.00	2.55
Barb Wire, f.o.b. Pittsburgh	2.05	2.05	2.45	2.60
Wire Nails, f.o.b. Pittsburgh	1.60	1.60	1.85	2.00
Cut Nails, f.o.b. Pittsburgh	1.60	1.65	1.65	2.15

METALS:

Copper, New York	12.02½	12.50	12.50	13.75
Spelter, St. Louis	5.00	4.72½	4.75	5.60
Lead, New York	4.20	4.10	4.20	4.12½
Lead, St. Louis	4.12½	4.00	4.00	4.20
Tin, New York	27.07½	26.85	27.00	27.50
Antimony, Hallett, New York	7.00	7.00	7.70	6.37½
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.49	3.49	3.49	3.99

* A reduction of 0.25 to 0.3 cent in prices is expected to-day.

Chicago.

FISHER BUILDING, August 31, 1904.—(By Telegraph.)

There is no doubt that business is dull in nearly all lines of Iron and Steel, and it is a remarkable fact that business in Plates, Structural Material and Rails, the three lines that are admittedly held far above their normal value, is more active than in the lines which buyers have succeeded in hammering down from firmer figures. The disturbances following the Billet deal and the resulting cut in Wire products have practically subsided, and still buyers refuse to place their orders, because they now conclude to wait to see if the frost kills the corn before completing their plans for the manufacturing season of the winter. It is shown by Government reports and other figures compiled by agricultural experts that the acreage and yield of corn this year is record breaking, and if this corn is permitted by the graces of climate to come to its maturity there will be no further excuse for holding the brakes on the wheels of progress. The average temperature in Chicago for the month of August is below 68 degrees, the lowest average recorded in 33 years, and already dispatches come from the Northwest to the effect that frost has been reached. There is little to say on Pig Iron, except that Northern producers are now pretty firmly on the \$13.50 basis, and that there is very little Southern Iron being sold in this market. The Rail business is fairly active, some large tonnage having been booked by American and Canadian roads, as reported in last week's issue, and quite a good business coming from electric roads. Sheets are ragged and uncertain as ever, with mills offering to take business at or below cost and getting an unsatisfactory tonnage at that. There is nothing new to report on Pipe or Boiler Tubes, but business is slow and prices are at least nominally maintained. The city of Chicago is in the market for about 1400 tons of Cast Iron Pipe, but outside of that there is little doing in this market. Old Materials are still on the upward climb, and the top is evidently not reached, although the ascending pace is not as swift as it has been for several weeks, and the downward

turn is looked for very soon. Coke is rather stronger than it has been for some weeks, owing to the large tonnage diverted to the Birmingham Coal fields because of the strike in that region. No new developments have come to light in the Wire market, although it is known that a large independent producer is giving retailers the benefit of jobbers' prices made by the leading producer.

Pig Iron.—The continuation of the difficulties in the Southern Coal mining fields and the attendant increased cost and insufficient supply of Coke to Southern furnaces have made Southern Iron less and less a factor in this market, except in so far as it has permitted Northern furnaces to stiffen up their prices. The second of the two largest factors in Northern Iron this week announced an increase in price to the minimum of \$13.50 for No. 2 Iron, at Chicago, the price that was named by the other leading factor about a month ago. Inasmuch as there is no longer any \$13.25 Northern Iron on the market and but little Iron much below \$13.50 we advance our price to the \$13.50 basis. At the same time we are led to reduce our price on Lake Superior Charcoal Iron 25c. to 50c., because of the very great tonnage of Charcoal Iron that is being piled up and is beginning to clamor for a market. This stiffening of the price of Northern Iron has led to a short period of hesitation on the part of buyers, who first wish to persuade themselves that the price is *bona fide* and permanent, and as a consequence no large orders have been placed in this market within the last few days, and it will probably take another week before buyers are satisfied that the new prices are there to stand. Southern Iron, as above intimated, is a minor factor in this market, and what business is being done is being booked on the basis of \$9.50, Birmingham, with here and there small lots still selling at 25c. lower where the Iron is not strictly up to the grade. We revise last week's prices as follows:

Lake Superior Charcoal.....	\$14.75 to \$15.00
Northern Coke Foundry, No. 1.....	14.00 to 14.50
Northern Coke Foundry, No. 2.....	13.50 to 14.00
Northern Coke Foundry, No. 3.....	13.00 to 13.50
Northern Scotch, No. 1.....	14.00 to 14.50
Ohio Strong Softeners, No. 1.....	14.80 to 15.05
Ohio Strong Softeners, No. 2.....	14.55 to 14.80
Southern Silvery, according to Silicon.....	14.15 to 15.15
Southern Coke, No. 1.....	13.65 to 13.90
Southern Coke, No. 2.....	13.15 to 13.40
Southern Coke, No. 3.....	12.90 to 13.15
Southern Coke, No. 4.....	12.15 to 12.40
Southern Coke, No. 1 Soft.....	13.65 to 13.90
Southern Coke, No. 2 Soft.....	13.15 to 13.40
Southern Gray Forge.....	12.15 to 12.40
Southern Mottled and White.....	11.90 to 12.15
Malleable Bessemer.....	13.50 to 14.00
Standard Bessemer.....	14.25 to 14.75
Jackson County and Kentucky Silvery,	
6 to 10 per cent. Silicon.....	17.30 to 19.30
Alabama Basic.....	..... to 18.15
Virginia Basic.....	14.10 to 14.85

Billets.—Very little trading is going on, and local forge shops are buying their Billets at about \$22 a ton, delivered, instead of \$24, the pool price for 4 x 4 and larger.

Rails and Track Supplies.—Evidently steam roads have made up their minds that they will have to pay the \$28 price for Standard Section Rails. A fair tonnage is being booked from electric roads, though no sales of magnitude have been closed within the week. It is understood that price competition for Standard Rail business is limited in its scope to concessions on Angle Bars, Track Bolts and Spikes, and that these commodities are sacrificed greatly in order to secure Rail tonnage. Light Rails are now being offered at from \$20 to \$21 per ton, maker's mill, or about \$8 less than Standard Rails. Even at these low prices the business being done in sections 40 lbs. and lighter is very small, buyers being just as persistent in holding for lower prices as they would be if the figures were on the basis of the Heavy Rail. Angle Bars are unchanged at 1.35c. to 1.40c. Spikes are now quoted at 1.65c. to 1.70c. in car lots from mill and as high as 1.85c. in small lots from store. Track Bolts are selling at 2.20c. to 2.25c., base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts, with an advance of about 15c. for shipment from store.

Structural Material.—The full 33,000 tons for the Southside Elevated road were closed last week, as published in the Chicago report, instead of only 21,000 to 22,000 tons named in our market editorial based on Eastern reports. The tonnage was split up into two orders: one for the Southside Elevated itself of about 22,000 tons, and one for the cross lines controlled by the Chicago Junction Railway of about 11,000 tons. This latter order was placed a day after the former, it being necessary to wait for a cable advice from the president of the latter company, who was in Europe. Officials of the American Bridge Company, though refusing to name the price paid, claim that our estimate of 2½c. a lb. erected is too low. The Structural Steel business in general is good as compared with other lines and prices for the plain material without fabrication or erection are being maintained very generally. We quote: Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, \$1 per ton extra. Store prices on Structurals are as follows: Angles, Beams, Channels and Tees, base sizes, 2c. to

2.10c.; Tees, 2.05c. to 2.15c., either random lengths or cut to lengths 5 feet and over.

Plates.—As soon as the Plate buying world satisfied itself that the newspaper reports of the wholesale reduction in prices were without foundation or fact it at once placed orders for current requirements, and in some cases for 60 to 90 days ahead. Official prices are unchanged as follows: 1.60c., Pittsburgh, for ¼ inch and heavier, 1.70c. for 3-16 inch, 1.75c. for No. 8, 1.85c. for No. 9. Nos. 8, 9 and 10 Plate are offered in this market by independents in widths 60 inches and under at about 1.72c., Chicago, as against the pool price of 2.01½c., Chicago, for No. 9. Store price on all gauges from No. 10 to the heaviest is 2c. to 2.10c., f.o.b. warehouse, with the usual extras for wide widths and special qualities.

Sheets.—A number of makers of Sheets claim that they have been able to market their product at higher prices than we have been quoting, but there are still several factors quoting prices even lower than the ones we have been scheduling for the past four or five weeks. For instance, Nos. 11 and 12 are being offered at 1.76½c., as against 1.86½c., our schedule price; Nos. 13 and 14 at 1.81½c., as against 1.91½c.; Nos. 15 and 16 at 1.86½c., as against our regular quotation of 1.96½c. to 2.01½c. The same variation extends into the lighter gauges, although No. 28 gauge is not often offered much lower than 2.26½c. Store prices on Sheets are nominally, at least, unchanged, as follows: No. 10 and heavier, 2c. to 2.10c.; No. 12, 2.05c. to 2.15c.; No. 14, 2.10c. to 2.20c.; No. 16, 2.20c. to 2.30c.; No. 18, 2.30c. to 2.40c.; No. 20, 2.30c. to 2.40c.; No. 22, 2.35c. to 2.45c.; No. 24, 2.40c. to 2.50c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c.; No. 29, 2.85c. to 2.95c. Galvanized Sheets are being sold in this market pretty generally at 80 and 7½ to 80 and 10 discount, Pittsburgh, for carload lots; 75 and 10 and 75, 10 and 5 are the ruling store quotations on small lots, though large desirable specifications would bring a little better price, f.o.b. Chicago warehouse.

Bars.—Iron Bars are being held quite firmly at 1.35c. by the leading producers, and the tendency to shade this price is being counteracted by the rapidly advancing price on such lines of Scrap as enter into the manufacture of Bars. Steel Bars are still quoted by the association mills at the 1.35c. basis, Pittsburgh, or 1.51½c., Chicago, and the International Harvester Company is still quoting 1.35c., Chicago, on such sizes as it makes. In other words, this producer has adopted the policy of selling its Steel Bars below the price of Bar Iron whenever necessary to secure a contract that it considers desirable. Hard Steel Angles rolled from Old Rails are held pretty generally at 1.17½c., flat, in car lots at mill. Business in Bars and Small Angles and Channels is disappointing, but better than it was a month ago. Soft Steel Angles, smaller than 3 inches on one leg, are unchanged in their prices of 1.45c., base, Pittsburgh, or 1.61½c., Chicago. Hoops are in slow demand, but prices are unchanged, nominally at least, at 1.71½c. rates, full extras. Store prices are as follows: Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Bars, 1.70c. to 1.75c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—More than half the tonnage to be contracted for for delivery up to July, 1905, has already been closed, but there are still a large number of buyers who are holding off for lower prices, in spite of the fact that they are able to make guaranteed contracts with responsible makers. Business is quiet and the disposition seems now to be to wait until the corn crop is out of danger of frost or other enemies. Official prices on Merchant Steel are as follows: Open Hearth Spring Steel to the general trade, 1.90c. to 2.10c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots; Railway Springs, carload lots, 1.71½c. to 1.86½c., with reductions for larger quantities. A new mill, known as the Columbia Tool Steel Company, is about to be erected at Chicago Heights for the manufacture of Tool Steel and other special grades of High Carbon Steel for the mechanical and agricultural trades. It will be a number of months before this plant will be a factor in the market, however.

Merchant Pipe.—Business is still quiet, but has improved a little since last week. Prices are unchanged, as follows:

	Steel Pipe.		Guar. Wr't Iron.	
	Black.	Galv.	Black.	Galv.
¾ to 1 inch.....	68.35	53.35	67.35	52.35
1 inch.....	71.35	61.35	70.35	60.35
1½ to 3 inches.....	76.85	66.85	75.85	65.85
3½ to 6 inches.....	75.35	65.35	74.35	64.35
7 to 12 inches.....	70.85	55.35	69.85	54.35

Boiler Tubes.—Business has not materially improved, but Tubes are being firmly held at the following prices, with

the exception of Iron Tubes, which are offered lower by certain interests. The discounts for less than carload lots, Chicago, are as follows:

	Steel	Iron.	Seamless Steel.
1 to 1½ inches.....	46.35	41.35	52.35
1½ to 2½ inches.....	58.35	41.35	40.35
2½ inches.....	60.35	46.35	43.35
2½ to 5 inches.....	66.35	53.35	up to 4 in. 50.85
6 to 13 inches.....	58.35	41.35	.....

Carload buyers are given a two-point better discount than the above. Warehouse prices on Boiler Tubes for delivery from store, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches.....	42½	37½	40
1½ to 2½ inches.....	52½	35	37½
2½ inches.....	55	37½	40
2½ to 5 inches.....	62½	47½	47½
6 inches and larger.....	52½	35	..

Cast Iron Pipe.—The city of Chicago is in the market for about 2 miles of 4-inch Pipe, aggregating about 1400 tons. This contract will be closed about September 1. Other than this no inquiries of any considerable tonnage are in evidence and business is comparatively quiet, though prices rule quite firmly on the basis of \$25.50 for 4-inch Water Pipe, \$24.50 for 6-inch and heavier, and \$1 extra for Gas Pipe. Large lots command lower prices.

Old Material.—The Chicago & Northwestern road is offering about 1500 tons of miscellaneous Scrap, and the Chicago, Milwaukee & St. Paul about 2000 tons, including 500 tons of Old Car Wheels and 600 tons of Rails of various classes. Neither of these lists will be closed until tomorrow, so that the prices named below as to-day's prices may be modified a week later by bids named on these two lists. The tendency is still upward to some extent, although there is an element of weakness in the speculative boom because Scrap has reached a point where the dealers are seeking to charge more for it than the cost of Pig Iron. It may be taken as a fact that the average foundryman will have to pay about \$11 a net ton for any Scrap that is worthy of being put into a good casting. This is equivalent to \$11.32 a gross ton, or but little less than the best No. 3 Southern Iron can be bought for. The consequence is that foundrymen are making their castings, as a rule, from pure Pig Iron, or at least are materially reducing the percentage of Scrap ordinarily used. We reduce prices on Short Length Steel Rails, making the maximum \$11 instead of \$11.50, and advance Iron Fish Plates and Railroad Malleable each 25c., otherwise last week's list is repeated without change, as follows, per gross ton:

Old Iron Rails.....	\$15.75 to \$16.25
Old Steel Rails, 4 feet and over.....	11.75 to 12.00
Old Steel Rails, less than 4 feet.....	10.50 to 11.00
Heavy Relaying Rails, subject to inspection.....	20.50 to 21.50
Heavy Relaying Rails, for side tracks.....	18.00 to 20.00
Old Car Wheels.....	11.00 to 11.50
Heavy Melting Steel Scrap.....	9.50 to 10.00
Mixed Steel.....	8.00 to 8.50

The following quotations are per net ton:

Iron Fish Plates.....	\$13.75 to \$14.25
Iron Car Axles.....	16.00 to 16.50
Steel Car Axles.....	14.00 to 14.50
No. 1 Railroad Wrought.....	11.50 to 12.00
No. 2 Railroad Wrought.....	10.50 to 11.00
Shafting.....	12.50 to 13.00
No. 1 Dealers' Forge.....	9.50 to 10.00
Wrought Pipes and Flues.....	8.00 to 8.50
Iron Axle Turnings.....	7.50 to 8.00
Soft Steel Axle Turnings.....	7.50 to 8.00
Machine Shop Turnings.....	7.00 to 7.50
Cast Borings.....	4.00 to 4.50
Mixed Borings, &c.....	4.00 to 4.50
No. 1 Mill.....	7.00 to 7.50
Country Sheet.....	5.00 to 5.50
No. 1 Boilers, cut to Sheets and Rings.....	8.00 to 8.50
No. 1 Cast Scrap.....	10.50 to 11.00
Stove Plate and Light Cast Scrap.....	8.75 to 9.25
Railroad Malleable.....	9.00 to 9.50
Agricultural Malleable.....	8.50 to 9.00

Metals.—An encouraging awakening in business is noted all along the line, and prospects are for a fair autumn trade after all. We quote: Casting Copper is being held at 12¼c. and Lake at 13c. Pig Tin is now quoted at 28c. to 28¼c. Pig Lead has advanced \$2 a ton, and is now quoted at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.40c. to 4.50c. for less than car lots. Spelter is sold at 4.80c. to 4.90c. for car lots and 5.10c. to 5.25c. for small lots. Sheet Zinc is 6¼c. for car lots of 600-lb. casks and 6½c. for less than car lots. Old Metals are stronger, and several advances in prices are noted. We quote Copper Wire and Heavy, 11¼c. to 11¾c.; Copper Bottoms, 10c.; Copper Clips, 11c. to 11¼c.; Red Brass, 9¾c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7¼c.; Yellow Brass Borings, 6¼c.; Light Brass, 5¾c.; Tea Lead, 4c.; Zinc, 4.25c.; Pewter, No. 1, 17¼c.; Block Tin Pipe, 22¼c.

Coke.—The large tonnage of Coke that is moving from the Virginia fields to Birmingham has tended to reduce the competition on low priced grades in this market, and as a consequence a good deal of Coke is being bought on the

basis of \$4.65, Chicago, for strictly Connellsville 72-hour Foundry grade, with less favored districts quoting 10c. to 13c. lower.

Cal Hirsch & Sons Iron & Railroad Company, St. Louis, Mo., have opened an office at 306 and 308 Railway Exchange Building, Chicago.

Philadelphia.

FORREST BUILDING, August 30, 1904.

While there is a slight improvement in the demand for Pig Iron, general conditions are extremely disappointing. It would be pleasant to make a more encouraging report, but we have to deal with facts rather than with wishes. In the first place, the volume of business does not increase, and, in the second, the uncertainty in regard to the prices of finished products is very disturbing. The expectation is that an amicable arrangement will be made, possible at slight reductions on some articles, but whatever may be agreed upon will be of a conservative character, and not disadvantageous to those who have contracts running or to those who may make new contracts. There is a general disposition to avoid everything likely to unsettle business, and nothing would be more likely to do that than a go as you please market. Whether it is desirable to make reductions or not is a question for manufacturers to decide, but the value of established prices has been so clearly demonstrated that a policy of that kind will not be thrown aside lightly. As regards the volume of business, it is a little remarkable that those who have Western connections report considerably more activity than in the territory immediately adjoining Philadelphia. Northern New York and Western Pennsylvania, they say, are giving much better results than Eastern Pennsylvania. The why and the wherefore, however, is not stated, and is not understood. Business is better than it was in June and July, however, but there is no snap to it, and nothing encouraging in sight for September and October, which ought to be the best months in the whole year. The impression among conservative people is that there will be no marked activity in the immediate future. The corn and cotton crops must be at least up to an average to insure favorable trade conditions, and as several weeks must elapse before they can be properly estimated, it is obvious that large operations will not be undertaken until there is absolute certainty in regard to these commanding influences. This is the more important because of an admitted failure in the wheat crop. It may not turn out to be very serious, but the most sanguine estimate falls much below that of the past four or five years. The corn crop looks well, but as the season is late, there is a possibility of considerable damage before the danger line is passed. Besides this there is the Presidential election coming on, and while there was never a time when the chances were more in favor of a Republican candidate than they are now, yet there is always a chance of a mishap, so that, considering the various possibilities along the lines suggested, it is quite likely that important operations will be held in abeyance until what are now merely expectations become assured facts.

Pig Iron.—The tone of the market is fairly steady, but buying is on conservative lines, so that there is nothing to indicate either better or worse conditions in the near future. All depends, therefore, on developments from week to week, which under prevailing circumstances are matters of more than ordinary uncertainty. Some things might happen of an unfavorable character and some might happen that would improve things, but which will come first it is impossible to say. The ultimate outcome will probably depend on the corn and cotton crops, and until these have made their record it is not likely that there will be much change. For the present demand and supply are evenly balanced, and until something occurs to change their proportions prices will remain about as they are. What may influence them at a later date has already been considered, so that it is not necessary to reiterate the various features, as there is really nothing more to be said in regard to that phase of the situation. For the present there is a fair amount of sales for September and October deliveries, some covering the remainder of the year, but the tonnage is not heavy and prices not materially different from last week. The movement in special Irons has been somewhat larger and prices for such are a shade higher, but the general list for Philadelphia and nearby deliveries is about as follows:

No. 1 X Foundry.....	\$15.00 to \$15.25
No. 2 X Foundry.....	14.25 to 14.50
No. 2 Plain.....	13.50 to 13.75
Standard Gray Forge.....	13.00 to 13.25
Ordinary Gray Forge.....	12.50 to 12.75
Southern No. 2 X Forge, rail.....	13.75 to 14.00
Basic.....	12.75 to 13.00
Low Phosphorus.....	17.50 to 18.00

Steel.—Demand is very light, as buyers are impressed with the idea that prices will be lower. The constant reiteration in the daily papers that the various price agreements are not going to be maintained has a depressing in-

fluence, but orders cannot be placed at less than \$24, delivered, unless they are of an unusual character.

Plates.—There is very little demand for Plates pending some definite announcement in regard to prices. The understanding in the trade is that no change has been made or will be made, but against this is the almost daily report that meetings are being held, or are to be held, at which the entire situation is to be gone over and prices rearranged. This is an unsettling influence, and is doing much to discourage immediate business, but buyers ought to feel sure that whether any change in prices is made or not they will be amply protected. Probably the feeling will be more settled in course of a few days, and in the meanwhile we quote what are declared to be the ruling prices—viz.:

	Part Carloads. carloads. Cents. Cents.
Tank Steel, ¼-inch and heavier.....	1.73½ 1.78½
Tank Steel, 3-16-inch.....	1.83½ 1.88½
Tank Steel, Nos. 7 and 8, B. W. G.....	1.88½ 1.93½
Tank Steel, Nos. 9 and 10, B. W. G.....	1.98½ 2.03½
Flange or Boiler Steel.....	1.88½ 1.93½
Commercial Fire Box Steel.....	1.93½ 1.98½
Still Bottom Steel.....	2.03½ 2.08½
Locomotive Fire Box Steel.....	2.23½ 2.28½
Plates over 100 to 110 inches.....	.05 per lb. extra
Plates over 110 to 115 inches.....	.10 "
Plates over 115 to 120 inches.....	.15 "
Plates over 120 to 125 inches.....	.25 "
Plates over 125 to 130 inches.....	.50 "
Plates over 130 inches.....	1.00 "
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches).....	.10 "
Complete Circles.....	.20 "

Structural Material.—What has been said in the previous paragraph applies equally to Structural Material, which is subject to the same conditions as the Plate trade, quotations being unchanged as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—The demand for Bars has improved considerably and there has undoubtedly been a good many orders placed, particularly by large consumers in Baltimore and nearby districts. Prices are fairly uniform, but it is claimed that business in large volume can be placed on the basis of about 1.30c., Pittsburgh, say 1.43½c. in this district, although 1.48½c. is fairly maintained for the ordinary run of business. Steel Bars are relatively firmer than Refined Iron, 1.48½c. being an inside figure.

Sheets.—There is no change in this department, the demand being about large enough to keep the mills at work from week to week. No accumulation of orders has been secured, but each week brings enough to prevent any real scarcity of work, which is perhaps all that ought to be expected under present conditions.

Old Material.—The turn appears to be slightly in buyers' favor, although prices are not lower. Buyers are not bidding as freely as they were, however, which has its effect on the selling interests, although some holders have withdrawn from the market in expectation of doing better later on. Bids and offers for deliveries in buyers' yards are as follows:

No. 1 Steel Scrap.....	\$12.00 to \$12.50
Old Steel Axles.....	15.00 to 16.00
Old Iron Axles.....	18.00 to 18.50
Old Iron Rails.....	15.50 to 16.00
Old Car Wheels.....	12.00 to 12.50
Choice Scrap, R. R. No. 1 Wrought.....	14.25 to 14.50
Machinery Scrap.....	11.50 to 12.00
Low Phosphorus Scrap.....	16.00 to 16.50
Wrought Iron Pipe.....	10.50 to 11.50
No. 1 Forge Fire Scrap.....	10.00 to 10.50
No. 2 Forge Fire Scrap, Ordinary.....	8.00 to 8.50
Wrought Turnings.....	8.75 to 9.25
Wrought Turnings, Choice Heavy.....	10.00 to 10.50
Cast Borings.....	6.75 to 7.00
Stove Plates.....	9.00 to 9.50

Cincinnati.

FIFTH AND MAIN STS., August 31, 1904.—(By Telegraph.)

Pig Iron.—The record of the past week shows the market in an exceedingly quiet condition. While there has been a fair sprinkling of sales in small lots, nothing of special magnitude has come to light that can be taken as an indication of activity in the near future. One large Southern furnace is reported to have decreased its stock on hand during the month of August 6000 tons. With a possibility of the strike continuing for an indefinite period, it is well nigh impossible to predict the outcome. One of the larger Southern producers, who has practically been out of the market for some weeks, is reported to be again ready to receive orders for delivery during the remainder of the year. Northern Iron is said to be firmer, with a majority of the furnaces quoting on a \$12 basis. There is an exception or two to the rule, however, and they are quoting on an \$11.50 basis, with sales reported at this figure. Southern Iron is very little in evidence at present, with now and then a small sale recorded where a special brand is desired. One

sale of 1000 tons of Northern Iron for Indianapolis delivery is reported at \$11.50. We learn that the American Car & Foundry Company is in the market for about 2500 tons of mixed grades and that the Detroit Stove Works is still figuring on its supply. Outside of these two inquiries nothing new has developed and consumers are merely looking after immediate needs. The Field-Evans Iron Company will on September 1 close its Cleveland office, after which time the territory formerly worked through that office will be taken care of through the Cincinnati branch of this concern. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$12.50 to \$12.75
Southern Coke, No. 2.....	12.00 to 12.25
Southern Coke, No. 3.....	11.50 to 11.75
Southern Coke, No. 4.....	11.25 to 11.50
Southern Coke, No. 1 Soft.....	12.50 to 12.75
Southern Coke, No. 2 Soft.....	12.00 to 12.25
Southern Coke, Gray Forge.....	11.00 to 11.25
Southern Coke, Mottled.....	10.75 to 11.00
Ohio Silvery, No. 1.....	15.65 to 16.15
Lake Superior Coke, No. 1.....	13.15 to 13.65
Lake Superior Coke, No. 2.....	12.65 to 13.15
Lake Superior Coke, No. 3.....	12.15 to 12.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.25 to \$16.75
Lake Superior Car Wheel and Malleable	15.80 to 16.30

Coke.—This has been an active week for this commodity, and a number of sales have been made embracing considerable tonnage. Foundry grades have stiffened somewhat, and with demand increasing from the strike district for Furnace grades, Coke has made a better record during the past week than has been shown for some months. Virginia Furnace is quoted from \$1.50 to \$1.60, while the best grades of Connellsville are being sold at \$1.90 to \$2.10, f.o.b. ovens.

Plates and Bars.—There have been so many rumors of a reduction in prices that buyers are slow in providing for their wants, consequently trade is less active than usual at this season of the year. Prices, however, remain the same. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.68c., in carload lots.

Old Material.—Trade has shown a degree more activity during the past week, and dealers hope that a change for the better has at last come. Prices as far as can be learned are unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$11 to \$11.50 per net ton; No. 1 Cast Scrap, \$9.25 per net ton; Iron Rails, \$14.50 per gross ton; Steel Rails, rolling mill lengths, \$11 to \$11.50 per gross ton; Iron Axles, \$15 per net ton; Car Wheels, \$11 to \$11.50 per gross ton; Heavy Melting Scrap, \$11.50 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

The International Association of Machinists has just issued its annual report, from which we make the following extracts: Total number of lodges organized April 1, 1903, to July 1, 1904, 117; total number of members admitted by charter, 3000; total number of lodges disbanded, 6; total number of members, 70,000. The association now has working agreements with nearly every important railway in the United States and Canada, with the exception of the Santa Fé Railway. During the past 15 months they have been involved in 202 strikes and lockouts, divided as follows: For a shorter work day, 27; against introduction of two machines, piece work and premium system, 18; against reduction of wages, 19; lockouts, 19; increased wages, 34; against increased hours of labor, 4; for signed agreement, 28; refusing to work on unfair articles, 14; against discrimination, 29; against open shop, 1; refusal to restore wages, 1; miscellaneous, 8. To this report is affixed a detailed statement of the costs of the several strikes, including that of last summer against the New York Metal Trades Association, which cost the International Association of Machinists \$23,000.

The July issue of *Electrical Mining*, published at Chicago, contained an interesting article descriptive of the mechanical equipment of the Collins Colliery in the New River district of West Virginia. The August issue describes, similarly, the plant of the Whipple Colliery Company, at Whipple, W. Va.

Pittsburgh.

PARK BUILDING, August 31, 1904.—(By Telegraph.)

Pig Iron.—The Pig Iron market continues quiet, and there is very little inquiry, except for Malleable Bessemer Iron, several large consumers figuring on purchases of round lots of Malleable for shipment over the balance of the year. The almost entire absence of buying has caused some weakness in prices of Bessemer Iron for prompt shipment, and several small sales have been made at prices ranging from \$11.65 to \$11.75, at Valley furnace, or \$12.50 to \$12.60, f.o.b. Pittsburgh. We note sales of Bessemer Iron as follows: 1000 tons at \$11.75, 2000 tons at \$11.65 and 1500 tons at \$11.65, all f.o.b. Valley furnace, to which 85c. a ton freight to Pittsburgh should be added. Sales of several good sized lots of Malleable Bessemer have been made at prices ranging from \$11.50 to \$11.75, at Valley furnace. A leading consumer is in the market for 1000 tons of Foundry Iron, 600 tons of Northern and 400 tons of Southern, but the business has not yet been placed. We quote No. 2 Northern Foundry Iron at \$11.75, Valley, for prompt shipment, and \$11.90 to \$12 for delivery over rest of this year. We quote Northern Forge at \$11.75 to \$11.85, Pittsburgh, for prompt delivery, while for balance of this year shipment \$11.90 to \$12, Pittsburgh, is asked. Southern furnaces are holding No. 2 Foundry at \$9.50, Birmingham, but practically no Southern Iron is coming into this market.

Steel.—There is practically no buying of Billets nor is there likely to be until the Steel situation has cleared up. Bessemer and Open Hearth Billets are being quoted at \$21 to \$23, several mills stating that they are adhering strictly to official prices, but admit they are not getting any business. Prices of Sheet and Tin Bars are firm on the basis of \$23.50 for Long Bars and \$24 for Cut Bars. As before noted, the supply of Sheet and Tin Bars is well under control and prices are being well sustained.

(By Mail.)

It was expected when our review of the Iron trade was written last week that the situation would be cleared up to some extent at least; but this has not been the case. A great deal of sensational news has been printed in the daily press within the past two or three weeks to the effect that the agreements on Billets, Plates, Structural Steel and Steel Bars would be speedily dissolved and the market for these products be made wide open. That these statements were far from the truth is proven by the fact that the Plate, Beam and Steel Bar agreements are still in force and prices are being just as firmly held as at any time since the agreements were made. In the case of Billets this is not true, as there has been more or less shading of prices for some time, and this is still being done. The heads of three or four of the large Steel interests have been conferring for a week past with a view of making arrangements with the Lackawanna Steel Company by which that company will act in harmony with the other Steel concerns on such products as Rails, Billets, Plates, Structural Steel and Steel Bars. The Lackawanna Company is already rolling Rails and Beams, but will not be in the market as a producer of Plates and Steel Bars for several months at least. However, quotations sent out by this company for these products have disturbed the trade to some extent, and to remove the unsettled condition of the market negotiations have been started with the view to having the Lackawanna Company become identified with the price agreements that are now in force. This will mean a rearrangement of the percentages in the several agreements in order to give the Lackawanna Company its fair allotment of the tonnage.

It seems to be the opinion that if the Billet agreement is continued there may be a reduction in prices. It is pointed out that with Bessemer Iron below \$13 and Billets at \$23 the spread is too wide and should be modified. It is believed that if the price of Billets was put on the basis of \$19 or \$20, and a corresponding reduction made in Plates and Structural Steel, it would be a benefit to the trade and stimulate buying. This, however, is only the view of the buyers and is not shared by the manufacturers, who argue that not a ton more of material would be placed if prices were \$2 a ton, or even \$5 a ton, lower than they are now. The negotiations in progress for the past week or more will probably be concluded this week, and, if so, it ought to have the effect of clearing the situation, which at present is rather mixed and is having the effect of restricting buying.

A few small sales of Bessemer Iron for September and October shipment are reported on the basis of \$11.85 and \$11.90, at Valley furnace, or \$11.70 and \$11.75, Pittsburgh.

For shipment over balance of the year most sellers quote Bessemer at \$12, at furnace, and refuse to shade it. There is a fair inquiry for Forge and Foundry Iron, Northern Forge being held at about \$11.85, Pittsburgh, for prompt shipment and \$12, Pittsburgh, for balance of year delivery. Northern brands of No. 2 Foundry are held at \$11.75 to \$12, Valley, to which should be added 85c. freight to Pittsburgh. In Finished Iron and Steel the situation is looking a little better, particularly in Sheets, demand for which during August showed some improvement, while the tone of the market is firmer. Buyers who read the sensational reports printed two or three weeks ago and expected to buy Plates, Structural Steel and Steel Bars at their own prices are now realizing the fact that the agreements on these products are still in force and that official prices are, in the main, being strictly observed.

Ferromanganese.—We do not hear of any sales and continue to quote English and domestic Ferro at about \$41.50, delivered, for large lots.

Muck Bar.—A sale of 300 tons of neutral Muck Bar is reported on the basis of \$24, delivered, to a mill in the Pittsburgh district. This price represents the market, which is quiet in demand.

Wire Rods.—There is a fair inquiry for Wire Rods in small lots and for prompt shipment. We quote Bessemer and Open Hearth Rods at \$28, Pittsburgh.

Skelp.—Prices of Skelp seem to be slightly weaker, and several sales of Grooved Steel Skelp are reported at 1.30c., maker's mill. We quote Grooved Iron Skelp at 1.35c. to 1.40c., and Sheared at 1.42½c. to 1.45c. Grooved Steel Skelp is held at about 1.30c., and Sheared 1.35c., f.o.b. Pittsburgh.

Steel Rails.—One of the Southwestern roads is reported to have placed an order for 18,000 tons of Steel Rails, the business going to a local interest. We also note that leading roads are now specifying quite liberally on contracts for Rails placed early in the year, and as a result Rail mills are all fairly busy. It is understood a comparatively low price was made on the 60,000 tons of Steel Rails placed by the Canadian Pacific with the Pennsylvania Steel Company. We quote nominally \$28 for Standard Sections, the mills equalizing freights. Low prices continue to be made on Light Rails, these ranging in price from \$19 up to \$23, depending on weight. In some cases 35 to 45 lb. Rails have sold below \$19, maker's mill.

Structural Material.—While no contracts have been placed since our last report a good deal of tonnage is in sight. This includes the elevated tracks on Duquesne Way, bids for which are about ready, and which will require 5000 to 6000 tons. A local concern has the contract for a Steel building for the Seamless Tube Company, at Monessen, about 800 tons, while a bank building at Mount Pleasant has been placed, calling for about 300 tons. It is understood that if negotiations now under way are carried out the Lackawanna Steel Company will become a member of the Beam agreement and will act in harmony as to prices. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Plates.—As yet we can report no improvement in demand for Plates, which is very quiet and the outlook not encouraging. The order for 1000 Steel cars placed by the Baltimore & Ohio Railroad with the Standard Steel Car Company will mean the consumption of about 12,000 tons of Plates and small Shapes, all of which will go to local mills. Official prices on Plates are, we are advised, being steadily observed by mills in the agreement, but a number of outside mills that roll narrow sizes up to 48 inches wide are shading prices to some extent. We quote as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, A. B. M. A., and ordinary Fire Box, 1.80c.; Still Bottom, 1.90c.; Locomotive Fire Box, not less than 2.10c. and up to 3c.; Plates over 100 inches to 110 inches in width, not less than 5c. per 100 lbs. extra; Plates over 110 inches to 115 inches wide, not less than 10c. extra; Plates over 120 inches to 125 inches wide, not less than 25c. extra; Plates over 125 inches to 130 inches wide, not less than 50c. extra; Plates over 130 inches wide, not less than \$1 extra; Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. Above prices are on carload lots, f.o.b. at mill, Pittsburgh, with 5c. extra for less than carloads lots; terms, net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Sheets.—Some improvement in the Sheet trade can be reported, demand being a little better than for some time, while specifications on contracts came in during August in a very satisfactory way. It is stated that the leading interest is operating 70 per cent. or more of its entire Sheet capacity and expects to start several idle mills within a short time. It is understood that the Independent Sheet Manufacturers' Association has been formally dissolved and the mills are at liberty to name whatever prices they see fit.

fluence, but orders cannot be placed at less than \$24, delivered, unless they are of an unusual character.

Plates.—There is very little demand for Plates pending some definite announcement in regard to prices. The understanding in the trade is that no change has been made or will be made, but against this is the almost daily report that meetings are being held, or are to be held, at which the entire situation is to be gone over and prices rearranged. This is an unsettling influence, and is doing much to discourage immediate business, but buyers ought to feel sure that whether any change in prices is made or not they will be amply protected. Probably the feeling will be more settled in course of a few days, and in the meanwhile we quote what are declared to be the ruling prices—viz.:

	Part Carloads.	Part carloads.
	Centa.	Centa.
Tank Steel, ¼-inch and heavier.....	1.73½	1.78½
Tank Steel, 3-16-inch.....	1.83½	1.88½
Tank Steel, Nos. 7 and 8, B. W. G.....	1.88½	1.93½
Tank Steel, Nos. 9 and 10, B. W. G.....	1.93½	2.03½
Flange or Boiler Steel.....	1.83½	1.88½
Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
Plates over 100 to 110 inches.....	.05 per lb. extra	
Plates over 110 to 115 inches.....	.10	
Plates over 115 to 120 inches.....	.15	
Plates over 120 to 125 inches.....	.25	
Plates over 125 to 130 inches.....	.50	
Plates over 130 inches.....	1.00	
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches).....	.10	
Complete Circles.....	.20	

Structural Material.—What has been said in the previous paragraph applies equally to Structural Material, which is subject to the same conditions as the Plate trade, quotations being unchanged as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—The demand for Bars has improved considerably and there has undoubtedly been a good many orders placed, particularly by large consumers in Baltimore and nearby districts. Prices are fairly uniform, but it is claimed that business in large volume can be placed on the basis of about 1.30c., Pittsburgh, say 1.43½c. in this district, although 1.48½c. is fairly maintained for the ordinary run of business. Steel Bars are relatively firmer than Refined Iron, 1.48½c. being an inside figure.

Sheets.—There is no change in this department, the demand being about large enough to keep the mills at work from week to week. No accumulation of orders has been secured, but each week brings enough to prevent any real scarcity of work, which is perhaps all that ought to be expected under present conditions.

Old Material.—The turn appears to be slightly in buyers' favor, although prices are not lower. Buyers are not bidding as freely as they were, however, which has its effect on the selling interests, although some holders have withdrawn from the market in expectation of doing better later on. Bids and offers for deliveries in buyers' yards are as follows:

No. 1 Steel Scrap.....	\$12.00 to \$12.50
Old Steel Axles.....	15.00 to 16.00
Old Iron Axles.....	18.00 to 18.50
Old Iron Rails.....	15.50 to 16.00
Old Car Wheels.....	12.00 to 12.50
Choice Scrap, R. R. No. 1 Wrought.....	14.25 to 14.50
Machinery Scrap.....	11.50 to 12.00
Low Phosphorus Scrap.....	16.00 to 16.50
Wrought Iron Pipe.....	10.50 to 11.50
No. 1 Forge Fire Scrap.....	10.00 to 10.50
No. 2 Forge Fire Scrap, Ordinary.....	8.00 to 8.50
Wrought Turnings.....	8.75 to 9.25
Wrought Turnings, Choice Heavy.....	10.00 to 10.50
Cast Borings.....	6.75 to 7.00
Stove Plates.....	9.00 to 9.50

Cincinnati.

FIFTH AND MAIN STS., August 31, 1904.—(By Telegraph.)

Pig Iron.—The record of the past week shows the market in an exceedingly quiet condition. While there has been a fair sprinkling of sales in small lots, nothing of special magnitude has come to light that can be taken as an indication of activity in the near future. One large Southern furnace is reported to have decreased its stock on hand during the month of August 6000 tons. With a possibility of the strike continuing for an indefinite period, it is well nigh impossible to predict the outcome. One of the larger Southern producers, who has practically been out of the market for some weeks, is reported to be again ready to receive orders for delivery during the remainder of the year. Northern Iron is said to be firmer, with a majority of the furnaces quoting on a \$12 basis. There is an exception or two to the rule, however, and they are quoting on an \$11.50 basis, with sales reported at this figure. Southern Iron is very little in evidence at present, with now and then a small sale recorded where a special brand is desired. One

sale of 1000 tons of Northern Iron for Indianapolis delivery is reported at \$11.50. We learn that the American Car & Foundry Company is in the market for about 2500 tons of mixed grades and that the Detroit Stove Works is still figuring on its supply. Outside of these two inquiries nothing new has developed and consumers are merely looking after immediate needs. The Field-Evans Iron Company will on September 1 close its Cleveland office, after which time the territory formerly worked through that office will be taken care of through the Cincinnati branch of this concern. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$12.50 to \$12.75
Southern Coke, No. 2.....	12.00 to 12.25
Southern Coke, No. 3.....	11.50 to 11.75
Southern Coke, No. 4.....	11.25 to 11.50
Southern Coke, No. 1 Soft.....	12.50 to 12.75
Southern Coke, No. 2 Soft.....	12.00 to 12.25
Southern Coke, Gray Forge.....	11.00 to 11.25
Southern Coke, Mottled.....	10.75 to 11.00
Ohio Silvery, No. 1.....	15.65 to 16.15
Lake Superior Coke, No. 1.....	13.15 to 13.65
Lake Superior Coke, No. 2.....	12.65 to 13.15
Lake Superior Coke, No. 3.....	12.15 to 12.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.25 to \$16.75
Lake Superior Car Wheel and Malleable.....	15.80 to 16.30

Coke.—This has been an active week for this commodity, and a number of sales have been made embracing considerable tonnage. Foundry grades have stiffened somewhat, and with demand increasing from the strike district for Furnace grades, Coke has made a better record during the past week than has been shown for some months. Virginia Furnace is quoted from \$1.50 to \$1.60, while the best grades of Connellsville are being sold at \$1.90 to \$2.10, f.o.b. ovens.

Plates and Bars.—There have been so many rumors of a reduction in prices that buyers are slow in providing for their wants, consequently trade is less active than usual at this season of the year. Prices, however, remain the same. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¼ x 3-16 and heavier, 1.68c., in carload lots.

Old Material.—Trade has shown a degree more activity during the past week, and dealers hope that a change for the better has at last come. Prices as far as can be learned are unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$11 to \$11.50 per net ton; No. 1 Cast Scrap, \$9.25 per net ton; Iron Rails, \$14.50 per gross ton; Steel Rails, rolling mill lengths, \$11 to \$11.50 per gross ton; Iron Axles, \$15 per net ton; Car Wheels, \$11 to \$11.50 per gross ton; Heavy Melting Scrap, \$11.50 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

The International Association of Machinists has just issued its annual report, from which we make the following extracts: Total number of lodges organized April 1, 1903, to July 1, 1904, 117; total number of members admitted by charter, 3000; total number of lodges disbanded, 6; total number of members, 70,000. The association now has working agreements with nearly every important railway in the United States and Canada, with the exception of the Santa Fé Railway. During the past 15 months they have been involved in 202 strikes and lockouts, divided as follows: For a shorter work day, 27; against introduction of two machines, piece work and premium system, 18; against reduction of wages, 19; lockouts, 19; increased wages, 34; against increased hours of labor, 4; for signed agreement, 28; refusing to work on unfair articles, 14; against discrimination, 29; against open shop, 1; refusal to restore wages, 1; miscellaneous, 8. To this report is affixed a detailed statement of the costs of the several strikes, including that of last summer against the New York Metal Trades Association, which cost the International Association of Machinists \$23,000.

The July issue of *Electrical Mining*, published at Chicago, contained an interesting article descriptive of the mechanical equipment of the Collins Colliery in the New River district of West Virginia. The August issue describes, similarly, the plant of the Whipple Colliery Company, at Whipple, W. Va.

Pittsburgh.

PARK BUILDING, August 31, 1904.—(By Telegraph.)

Pig Iron.—The Pig Iron market continues quiet, and there is very little inquiry, except for Malleable Bessemer Iron, several large consumers figuring on purchases of round lots of Malleable for shipment over the balance of the year. The almost entire absence of buying has caused some weakness in prices of Bessemer Iron for prompt shipment, and several small sales have been made at prices ranging from \$11.65 to \$11.75, at Valley furnace, or \$12.50 to \$12.60, f.o.b. Pittsburgh. We note sales of Bessemer Iron as follows: 1000 tons at \$11.75, 2000 tons at \$11.65 and 1500 tons at \$11.65, all f.o.b. Valley furnace, to which 85c. a ton freight to Pittsburgh should be added. Sales of several good sized lots of Malleable Bessemer have been made at prices ranging from \$11.50 to \$11.75, at Valley furnace. A leading consumer is in the market for 1000 tons of Foundry Iron, 600 tons of Northern and 400 tons of Southern, but the business has not yet been placed. We quote No. 2 Northern Foundry Iron at \$11.75, Valley, for prompt shipment, and \$11.90 to \$12 for delivery over rest of this year. We quote Northern Forge at \$11.75 to \$11.85, Pittsburgh, for prompt delivery, while for balance of this year shipment \$11.90 to \$12, Pittsburgh, is asked. Southern furnaces are holding No. 2 Foundry at \$9.50, Birmingham, but practically no Southern Iron is coming into this market.

Steel.—There is practically no buying of Billets nor is there likely to be until the Steel situation has cleared up. Bessemer and Open Hearth Billets are being quoted at \$21 to \$23, several mills stating that they are adhering strictly to official prices, but admit they are not getting any business. Prices of Sheet and Tin Bars are firm on the basis of \$23.50 for Long Bars and \$24 for Cut Bars. As before noted, the supply of Sheet and Tin Bars is well under control and prices are being well sustained.

(By Mail.)

It was expected when our review of the Iron trade was written last week that the situation would be cleared up to some extent at least; but this has not been the case. A great deal of sensational news has been printed in the daily press within the past two or three weeks to the effect that the agreements on Billets, Plates, Structural Steel and Steel Bars would be speedily dissolved and the market for these products be made wide open. That these statements were far from the truth is proven by the fact that the Plate, Beam and Steel Bar agreements are still in force and prices are being just as firmly held as at any time since the agreements were made. In the case of Billets this is not true, as there has been more or less shading of prices for some time, and this is still being done. The heads of three or four of the large Steel interests have been conferring for a week past with a view of making arrangements with the Lackawanna Steel Company by which that company will act in harmony with the other Steel concerns on such products as Rails, Billets, Plates, Structural Steel and Steel Bars. The Lackawanna Company is already rolling Rails and Beams, but will not be in the market as a producer of Plates and Steel Bars for several months at least. However, quotations sent out by this company for these products have disturbed the trade to some extent, and to remove the unsettled condition of the market negotiations have been started with the view to having the Lackawanna Company become identified with the price agreements that are now in force. This will mean a rearrangement of the percentages in the several agreements in order to give the Lackawanna Company its fair allotment of the tonnage.

It seems to be the opinion that if the Billet agreement is continued there may be a reduction in prices. It is pointed out that with Bessemer Iron below \$13 and Billets at \$23 the spread is too wide and should be modified. It is believed that if the price of Billets was put on the basis of \$19 or \$20, and a corresponding reduction made in Plates and Structural Steel, it would be a benefit to the trade and stimulate buying. This, however, is only the view of the buyers and is not shared by the manufacturers, who argue that not a ton more of material would be placed if prices were \$2 a ton, or even \$5 a ton, lower than they are now. The negotiations in progress for the past week or more will probably be concluded this week, and, if so, it ought to have the effect of clearing the situation, which at present is rather mixed and is having the effect of restricting buying.

A few small sales of Bessemer Iron for September and October shipment are reported on the basis of \$11.85 and \$11.90, at Valley furnace, or \$11.70 and \$11.75, Pittsburgh.

For shipment over balance of the year most sellers quote Bessemer at \$12, at furnace, and refuse to shade it. There is a fair inquiry for Forge and Foundry Iron, Northern Forge being held at about \$11.85, Pittsburgh, for prompt shipment and \$12, Pittsburgh, for balance of year delivery. Northern brands of No. 2 Foundry are held at \$11.75 to \$12, Valley, to which should be added 85c. freight to Pittsburgh. In Finished Iron and Steel the situation is looking a little better, particularly in Sheets, demand for which during August showed some improvement, while the tone of the market is firmer. Buyers who read the sensational reports printed two or three weeks ago and expected to buy Plates, Structural Steel and Steel Bars at their own prices are now realizing the fact that the agreements on these products are still in force and that official prices are, in the main, being strictly observed.

Ferromanganese.—We do not hear of any sales and continue to quote English and domestic Ferro at about \$41.50, delivered, for large lots.

Muck Bar.—A sale of 300 tons of neutral Muck Bar is reported on the basis of \$24, delivered, to a mill in the Pittsburgh district. This price represents the market, which is quiet in demand.

Wire Rods.—There is a fair inquiry for Wire Rods in small lots and for prompt shipment. We quote Bessemer and Open Hearth Rods at \$28, Pittsburgh.

Skelp.—Prices of Skelp seem to be slightly weaker, and several sales of Grooved Steel Skelp are reported at 1.30c., maker's mill. We quote Grooved Iron Skelp at 1.35c. to 1.40c., and Sheared at 1.42½c. to 1.45c. Grooved Steel Skelp is held at about 1.30c., and Sheared 1.35c., f.o.b. Pittsburgh.

Steel Rails.—One of the Southwestern roads is reported to have placed an order for 18,000 tons of Steel Rails, the business going to a local interest. We also note that leading roads are now specifying quite liberally on contracts for Rails placed early in the year, and as a result Rail mills are all fairly busy. It is understood a comparatively low price was made on the 60,000 tons of Steel Rails placed by the Canadian Pacific with the Pennsylvania Steel Company. We quote nominally \$28 for Standard Sections, the mills equalizing freights. Low prices continue to be made on Light Rails, these ranging in price from \$19 up to \$23, depending on weight. In some cases 35 to 45 lb. Rails have sold below \$19, maker's mill.

Structural Material.—While no contracts have been placed since our last report a good deal of tonnage is in sight. This includes the elevated tracks on Duquesne Way, bids for which are about ready, and which will require 5000 to 6000 tons. A local concern has the contract for a Steel building for the Seamless Tube Company, at Monessen, about 800 tons, while a bank building at Mount Pleasant has been placed, calling for about 300 tons. It is understood that if negotiations now under way are carried out the Lackawanna Steel Company will become a member of the Beam agreement and will act in harmony as to prices. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Plates.—As yet we can report no improvement in demand for Plates, which is very quiet and the outlook not encouraging. The order for 1000 Steel cars placed by the Baltimore & Ohio Railroad with the Standard Steel Car Company will mean the consumption of about 12,000 tons of Plates and small Shapes, all of which will go to local mills. Official prices on Plates are, we are advised, being steadily observed by mills in the agreement, but a number of outside mills that roll narrow sizes up to 48 inches wide are shading prices to some extent. We quote as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, A. B. M. A., and ordinary Fire Box, 1.80c.; Still Bottom, 1.90c.; Locomotive Fire Box, not less than 2.10c. and up to 3c.; Plates over 100 inches to 110 inches in width, not less than 5c. per 100 lbs. extra; Plates over 110 inches to 115 inches wide, not less than 10c. extra; Plates over 120 inches to 125 inches wide, not less than 25c. extra; Plates over 125 inches to 130 inches wide, not less than 50c. extra; Plates over 130 inches wide, not less than \$1 extra; Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. Above prices are on carload lots, f.o.b. at mill, Pittsburgh, with 5c. extra for less than carloads lots; terms, net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Sheets.—Some improvement in the Sheet trade can be reported, demand being a little better than for some time, while specifications on contracts came in during August in a very satisfactory way. It is stated that the leading interest is operating 70 per cent. or more of its entire Sheet capacity and expects to start several idle mills within a short time. It is understood that the Independent Sheet Manufacturers' Association has been formally dissolved and the mills are at liberty to name whatever prices they see fit.

We note, however, that the tone of the Sheet market is firmer than for some time and there is very little shading in prices. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 1.95c.; No. 27, 2c.; No. 28, 2.10c., in carloads and larger lots. Galvanized Sheets are sold at about 80 and 7½ per cent. off, but on very desirable specifications a few mills occasionally name 80 and 10 per cent. off in large lots. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. Jobbers charge the usual advance over these prices on small lots from store.

Iron and Steel Bars.—The situation in the Bar trade is rather quiet, a good deal of prospective buying having been put off until consumers are thoroughly satisfied that there will be no reduction in prices. We may state that several of the leading Steel Bar mills advise us that official prices are being rigidly held, while consumers also report that efforts to buy Bars at less than official prices have been unsuccessful. Tonnage in Iron Bars is only fair, consumers not being disposed to contract, but are buying only for actual needs and in small lots. We quote Bessemer Steel Bars at 1.35c., Pittsburgh, in carloads and larger lots, and 1.40c. for Open Hearth Bars, with the usual differentials for small lots. We quote Refined Iron Bars at 1.30c., f.o.b. Pittsburgh, but on Bars made from part Scrap this price might be slightly shaded.

Spikes.—We quote Railroad Spikes at \$1.65 per 100 lbs. for less than carloads and \$1.60 for carloads and larger lots, f.o.b. Pittsburgh.

Hoops and Bands.—Tonnage in Hoops is said to be showing some increase, orders received by the mills being larger than for some time. We quote Steel Hoops at 1.55c. and Steel Bands at 1.35c., extras as per Steel card.

Merchant Pipe.—Considering that this is the dull season of the year in the Pipe trade, the amount of tonnage being placed at the present time is regarded by the mills as fairly satisfactory. The tone of the market is firm, official prices being quite generally observed. Last week the Wheeling Steel & Iron Company took a contract for 25 miles of 6½-inch Casing for the Eastern Oil Company, to be used in building Pipe lines in West Virginia. Discounts to consumers in carloads are as follows:

	Merchant Pipe.		Iron.	
	Black.	Galv.	Black.	Galv.
1/2, 3/4 and 1 inch.....	70	55	69	54
1 1/2 inch.....	73	63	72	62
2 to 3 inches.....	78 1/2	68 1/2	77 1/2	67 1/2
3 1/2 to 6 inches.....	77	67	76	66
7 to 12 inches.....	72 1/2	57	71 1/2	56
Extra strong, plain ends, 1/2 to 8 inches.....	69	59	68	58
Double extra strong, plain ends, 1/2 to 8 inches.....	60	50	56	46

Boiler Tubes.—Demand for Boiler Tubes is only fair, orders being mostly for actual needs and small lots. The railroads, which are the largest consumers of Tubes, are placing very little new tonnage. Prices are fairly firm, discounts to consumers in less than carloads being as follows:

	Steel.	Iron.
1 to 1 1/4 inches.....	48	43
1 1/4 to 2 1/4 inches.....	60	43
2 1/4 inches.....	62	48
2 1/4 to 5 inches.....	68	55
6 to 13 inches.....	60	43

In carload lots discounts are two points lower than the above.

Merchant Steel.—There has been a slump in orders, and new tonnage being placed with the mills is very light. While prices are not quotably lower they are weak. We quote: Plow Slabs, ¾-inch and heavier, 1.60c.; Tire Steel, 1.55c. to 1.60c.; Sleigh Shoe, flat, 1.40c. to 1.45c.; Cutter Shoes, 2.05c. to 2.10c.; Plow Steel, 6 inches and under, 1.35c.; Toe Calk Steel, 1.85c. to 1.90c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered.

Spelter.—The market is very dull, but prices are fairly steady. We quote best grades of Prime Western Spelter at 4.73½c. to 4.78½c., Pittsburgh.

Tin Plate.—The Tin Plate trade is rather quiet as far as new demand is concerned, but the mills are busy on old contracts. We quote 100-lb. Cokes at \$3.25, net, f.o.b. Pittsburgh district, terms 30 days, or 2 per cent. off for cash in 10 days.

Coke.—We note an increasing demand for Foundry Coke, and in the past week the Frick Coke Company fired up 649 ovens. In the Upper and Lower Connellsville regions there are 29,230 ovens, of which 18,382 were active last week and 10,848 idle. We quote strictly Connellsville Furnace Coke at \$1.40 to \$1.45 a ton at oven. Strictly Connellsville 72-hour Foundry Coke ranges from \$1.75 to \$1.85 a ton at oven. Main Line Furnace Coke, which is not so high in quality as Connellsville, is offered as low as \$1.30 a ton at oven, and Main Line Foundry about \$1.00 a ton at oven.

Iron and Steel Scrap.—The Scrap trade is exceedingly quiet, and prices have gone off somewhat in the past two weeks, owing to the refusal of consumers to take in material until the situation in regard to Billets and Finished Material is clearer. Heavy Melting Stock is being offered as low as \$11.50 in gross tons, although some sellers refuse to meet this price. Other grades of Scrap have gone from 50c. to \$1 a ton.

The sales department of the Portsmouth Steel Company has been moved from Wheeling, W. Va., to the works at Portsmouth, Ohio, where E. T. Conners, secretary, who is in charge of the sales department, will hereafter be located.

Cleveland.

CLEVELAND, OHIO, August 30, 1904.

Iron Ore.—Various reports have been spread during the past week touching an improvement in the Iron Ore trade of the lakes. It was indicated in these advices that the Ore sales were on the increase and that there has been an appreciable increase in the amount of this material being bought down the lakes. In neither of these reports is there any truth. The Ore sales, on the contrary, are very light, most of the buying for this year having been accomplished. The Ore movement is so light that the boats engaging in the trade find it difficult to get loads, and the rates are only kept from falling still further by sufrage on the part of the shippers. It is possible that there is, too, a certain fear that any further reduction in the rates would cause some of the boats to be tied to the docks. Carrying charges are 65c. from Duluth, 60c. from Marquette and 50c. from Escanaba. The prices are almost nominal, business being so light. They are unchanged at \$3.25 for Bessemer old range and \$3 for Bessemer Mesaba. The non-Bessemer Ores cover a little wider range of prices. Non-Bessemer old range is quoted \$2.60 to \$2.75 and non-Bessemer Mesaba is quoted \$2.40 to \$2.50. The movement from the lake stock piles to the furnace docks shows a slight improvement, indicating that some of the stocks are being exhausted, and the movement is more direct.

Pig Iron.—The buying of Foundry Iron is fair. The buying of Bessemer and Basic is still some time in the future. There is an evidence of some need of the latter grades, but the market is without any buying movement just now. We quote Pig Iron prices, f.o.b. Cleveland, as follows:

Northern Coke, No. 1 Foundry.....	\$13.50 to \$13.75
Northern Coke, No. 2 Foundry.....	13.00 to 13.25
Northern Coke, No. 3 Foundry.....	12.50 to 12.75
Southern Coke, No. 1 Foundry.....	13.35 to 13.60
Southern Coke, No. 2 Foundry.....	12.85 to 13.10
Southern Coke, No. 1 Soft.....	13.35 to 13.60
Southern Coke, No. 2 Soft.....	12.85 to 13.10
Jackson County, 8 per cent. Silicon.....	16.45
Hanging Rock Charcoal, No. 1.....	23.45
Southern Charcoal, No. 1.....	17.85
Lake Superior Charcoal.....	15.50 to 16.00

Finished Iron and Steel.—Renewed and persistent efforts to break the market on Finished Materials have been the feature of the trade during the past week. The stress has been laid upon the Plate and Structural situations. The first assault upon the pool prices came from the shipbuilders. The American Ship Building Company has taken contracts for two new ships. The prices charged are said to be pretty close to cost, unless there is some reduction in the price of Steel. In addition other inquiries have come in indicating other ship orders ahead if the Steel prices are reduced. It is beyond question that there is a general expectation in the trade here that prices will be cut. Buyers are now holding back until that reduction of price has come. The tendency to withhold orders is more pronounced than it was a week ago. In many instances consumers have even stopped specification on old contracts. Not so much stress is laid upon the Billet situation here because that has been an infinitesimal part of the business. In Bars and Sheets there is a little stronger situation. The Sheet buyers are sending in orders steadily without regard to prices, it being considered that those prices are about rock bottom. The mills have stopped talking about an advance at once. Stock business is good. Base prices are 2.05c. to 2.10c. for No. 27 Black Sheets in car lots at the mill and 2.50c. for No. 27 Black Sheets out of stock. Bars are holding steady at 1.35c., Pittsburgh, for Bessemer Steel Bars, and 1.40c., Pittsburgh, for Open Hearth. It is evident that the market for Bar Iron is weak. Some of the mills have been trying to hold up to 1.30c. at the mill for Bar Iron, but in most instances the competition has been too strong and the prices have been shaded. In some instances prices have gone as low as 1.20c. at the mill, while quotations of 1.25c. are not uncommon at the mill. It is noted that in some places there is a shortage of Light Rails for immediate shipment. There is a fair call for them.

Old Material.—The market has been rather dull. The dealers have been hoping for a turn upward. The Bar Iron mills have been bearing down on prices, and rather than

being able to cause an advance the dealers have found a struggle to keep the prices firm. There is a great deal of irregularity in the trade, and the best that can be done in prices is to approximate the market. We continue to quote, all gross tons: Old Steel Rails, \$12; Old Car Wheels, \$11 to \$12; Heavy Melting Steel, \$11 to \$12. All net tons: Cast Borings, \$4; No. 1 Busheling, \$10.50; No. 1 Railroad Wrought, \$12 to \$12.50; Wrought Turning, \$7; Iron Car Axles, \$16 to \$17; No. 1 Cast, \$10.50 to \$11; Stove Plate, \$7 to \$7.50.

The Cambria Steel Company has opened a sales office in the Citizens' Building, Cleveland, Ohio, under the management of E. D. Rogers, with F. W. Coxe, from the Johnstown office, and W. B. Smyth from the Philadelphia office, as his assistants. All the products of the Cambria Company will be covered by the new branch, except Heavy Weight Rails, which will be handled as heretofore by W. E. C. Coxe of Toledo.

H. Emerman & Co., dealers in Iron and Steel Scrap, have removed their offices from Seneca and Jefferson streets to 719 Garfield Building. Their yards will continue at Seneca and Jefferson streets.

Chicago Machinery Market.

CHICAGO, ILL., August 29, 1904.

There are signs of an awakening activity in the machinery market, and building operations calling for factory equipment are on the increase.

A. Bolter's Sons Company, foundrymen and structural iron workers, is making additions to its plant at Belden avenue and Ward street, which will about double its capacity. The machinery required includes an air compressor to furnish 500 feet of free air a minute, a rotary plate shear, angle shears, straightening and bending machines, plate punches, besides a number of individual motors for running these machines, and an enlargement of the present air tool equipment, both as to hammers and drills. Part of this equipment will have been placed by the time this item is printed.

W. H. Schott, Marquette Building, Chicago, is consulting engineer in charge of plans for an electric power station for the Kewanee, Cambridge & Geneseo Electric Interurban Railway. The road is to be 30 miles long. The power equipment, which is not yet placed, will consist of four 300 horse-power water tube boilers, two 500-kw. 2200-volt 25-cycle generators running at 100 revolutions per minute, two cross compound engines, Corliss type, 20 x 40 x 42, or about 750 horse-power each; besides accessory machinery. None of this machinery has yet been placed.

The MacDonald Engineering Company, Monadnock Block, has a contract for a steel fire proof grain elevator, 600,000 bushels capacity, to be erected at Kansas City, Mo., for the Rosenbaum Grain Elevator Company. This plant will require four 150 horse-power tubular boilers, which have not been placed. An order has been given to Allis-Chalmers Company for a 500 horse-power tandem compound engine. This elevator will be for the purpose of transferring, cleaning and grading grain received from Western points for reshipment to the East. The transmission and cleaning machinery will be made after designs drawn by the MacDonald Engineering Company, who has not yet placed contracts for the construction of this apparatus. A small electric light plant for 150 lights is also to be placed. The elevator is a steel and cement structure, and will be completed early next spring. The same engineers are just completing an elevator of the same size and capacity for the Ogilvie Flouring Mill Company, at Fort William, Ontario, near Port Arthur, on the northern bank of Lake Superior. This plant is electrically driven, the whole power equipment having been furnished by the Westinghouse Company. It is a terminal elevator on the Canadian Pacific road intended for the transferring of shipments of grain to vessels on Lake Superior.

Holabird & Roche, architects, Chicago, have awarded to the Stirling Boiler Company, Chicago, the contract for two 202 horse-power Stirling water tube boilers with Roney stokers for the Chicago Savings Bank Building at Madison and State streets. High duty pumps have been ordered from Laidlaw, Dunn-Gordon Company.

Nimmons & Fellows, Marquette Building, Chicago, are preparing plans for a large canning factory for Reid, Murdoch & Co., wholesale grocers, Chicago. The factory is to be erected at Hammond, Ind. Details of power and machinery equipment have not yet been made public.

The Chicago, Milwaukee & St. Paul Railway Company, Railway Exchange Building, Chicago, is in the market for a 15-ton hand power freight pillar crane and two steam hoisting engines 8 to 12 horse-power, 50-foot lift.

The Atchinson, Topeka & Santa Fé Railroad is rebuilding the shops at Cleburne, Texas, recently destroyed by fire. The schedules of the machinery equipment necessary is not yet published.

The Department of Electricity of the city of Chicago

awarded contracts as follows for the new electrical power station at Fullerton avenue and the north branch of the Chicago River: Two 1000 horse-power Buckeye engines, 150 revolutions per minute, from the Buckeye Engine Company, Salem, Ohio; two 750-kw. alternating Bullock generators from the Bullock Electric Mfg. Company, Cincinnati, Ohio; four 500 horse-power water tube boilers, 225 pounds pressure, from Kewanee Boiler Company, Kewanee, Ill.; 500 alternating current arc lamps from the General Incandescent Arc Light Company, New York and Chicago. E. B. Ellicott, the chief of the department, is readvertising for the mechanical induced draft apparatus for this plant, as bids submitted on the first advertisement were not satisfactory. This mechanical draft apparatus will include a separate engine for each of four fans, engines not to exceed 125 revolutions per minute, as well as the fans and other appliances connected with the apparatus. The same buyer is asking for bids on a 15-ton, hand operated, traveling crane with cage, 50-foot span. Bids on the draft apparatus and on the crane close noon, August 31. The boiler feed pumps and other appliances necessary for a modern electrical power station will also be required, but have not yet been advertised for. The contract for erecting the building will be closed in a few days. This contract will specify the completion of the building by October 15.

Zachary T. Davis, 79 Dearborn street, Chicago, is perfecting plans for rebuilding the slaughter and packing house at the Union Stock Yards owned by Randall W. Burns and leased by the National Provision Company, which was destroyed by fire some months ago. As the power and machinery equipment were destroyed, they will have to be renewed. The total cost will exceed \$150,000.

Mandel Brothers, proprietors of a large department store, State and Madison streets, Chicago, are taking figures on a complete new power equipment, including 1800 horse-power in boilers and engines, with generators, motors, pumps and ventilating system in proportion. Alfred Johnson, their chief engineer, has charge.

The new warehouse and office building, being erected on Fifth avenue by the Paper Mills Company, will require two 80 horse-power boilers, as well as elevators, pumps, &c. The owners have not yet decided whether to put in their own engine and generator for power purposes, or to buy their power.

Armour & Co. will shortly erect a soap factory, six stories, 126 x 306 feet, fire proof construction. The present plan is to take power from the adjoining Armour glue works, in which case the machinery purchases will consist largely of motors.

Barnard & Leas Mfg. Company, Moline, Ill., has just completed the execution of an order for \$30,000 worth of machinery to equip a flour mill in China. This machinery, which forms a 400-barrel plant, was consigned to the China Hsing Milling Company of Shanghai. The equipment includes not only the flour mill machinery proper, but four Corliss engines, together with the necessary boilers, pumps, generators, switchboards, and the like. This is said to be one of the first large flour mill plants to be shipped to China.

The Michigan Central Railroad is planning the erection of a grain elevator at Kensington, Ill., the power plant of which will aggregate about 400 horse-power.

The Addressograph Company is erecting an eight story fire proof factory, 100 x 125 feet, at Van Buren and Peoria streets. Steam and electric power plant will be installed, but details are not yet forthcoming. L. G. Halberg, 84 La Salle street, is the architect.

The Great Northern Hotel is preparing plans for an alternating electric power plant, of which Sargent & Lundy, Railway Exchange Building, are consulting engineers.

Richard Reynolds is to erect a manufacturing building at Greene and Congress streets, four stories in height, and 116 x 125 feet in dimensions. About 200 horse-power in boilers and engines will be required, with other mechanical equipment in proportion. Hill & Waltersdorf, 70 La Salle street, are the architects.

The Andrews Wire & Iron Works, Rockford, Ill., is erecting a cement fire proof building two stories in height as an addition to its present plant. This building is the first of a series that will be erected as part of an extensive plan by which all the wooden buildings of the present plant will be replaced by cement or other fire proof structures. Some new machinery will be required, but details are not given.

The Rockford Boiler Works, Rockford, Ill., is building an addition to its boiler and blacksmith shop. A number of new tools will be purchased.

The Illinois Tunnel Company has leased 3 acres of land at Quarry street and the Chicago River for 99 years from the Northwestern University and will erect thereon a large power station. Details are not yet completed as to the requirements of the station.

The third annual convention of the Master Steam Boiler Makers' Association, whose members are superintendents and foremen of boiler shops, will be held at the Inside Inn, World's Fair Grounds, St. Louis, Mo., September 6, 7, 8 and 9.

Philadelphia Machinery Market.

PHILADELPHIA, PA., August 29, 1904.

But little of interest can be noted in the Philadelphia machinery market during the month of August. Conditions remaining practically the same as they have been during the past few months; trade has, if anything, been quieter in almost all lines, which was not altogether unexpected, as August like July, is usually a dull month. Vacation periods have, in many instances, held up business, which it is likely would under ordinary circumstances have been placed. While some manufacturers have probably gone still further behind, or at least made no gains, it is well to note an improvement in a few lines, notably pneumatic tools, which have been in good demand and necessitated working overtime in order to meet the requirements. A few smaller manufacturers of special tools have also taken on considerable work, enough to keep them running at full capacity with early promise of still larger business. While the few instances noted are not important enough to affect the general condition of the market, it is gratifying to note a tendency toward betterment even though small.

The amount of work on machinery and machine tool builders' books is, on the whole, small. The percentage of idle tools, particularly in the larger plants, has, if anything, increased, and with many it is a problem of no small magnitude to keep things going. Working forces and hours have been reduced, and every effort made to keep costs down to the lowest point. Curtailments have in instances been carried to such a length that further extensions would mean a shut-down. These features stand out most prominently in the larger plants, most of which have greatly increased their productive capacity during the past few years. The smaller plants, while they are dull enough, do not require a great amount of work to keep them going, nor are they burdened with the heavy fixed charges under which the former plants are operated.

With the present general indications, however, some increase in the volume of business is expected during September, and while crop conditions continue favorable, there is still the agitation of a Presidential election canvas to be contended with. Some also argue that the present more or less unsettled condition of prices of certain raw materials will have a restraining influence on purchasers until a more stable level is reached. All in all, conditions for any general resumption of business at an early date are probably less favorable; a certain amount of business will be placed during the next few months, but December is mentioned by some as the time to expect a permanent improvement, while others defer it until after the first of next year, all conceding, however, that there will be no change in the political complexion of the country.

Inquiries during the month have been unsatisfactory. In some lines they have improved, but have not lead up to any increased business. Some good railroad specifications are out, but there has been no placing of orders to any great extent in connection with them. The demand, on the whole, is irregular, and the market in a number of instances is most likely being felt by buyers who must ultimately make purchases of needed equipment, the direct placing of which, however, is being deferred until the last possible moment. Special machinery requirements appear to take hold better, and in several lines there have been fairly good orders taken for machinery out of the general line.

Deliveries on all classes of tools can be promptly had. Large stocks of standard goods are on manufacturers' hands, as well as on dealers' floors, and prompt shipments can be had in almost every case. Special tools require no extended delays, and deliveries of such tools can be made with usual promptness.

There is little change in the general activity of the various plants in this territory. Some smaller ones have more work in hand, but are counterbalanced by further declines of others. Almost every one could handle a great deal more work, and still not be particularly crowded.

Foreign demand shows a little activity here and there, but nothing has developed to indicate an early revival of the former extensive trade. Some manufacturers are making a more determined fight for this business, but those who have had a more or less regular trade abroad, do not lend much encouragement, as in most cases the demand has declined.

The demand for castings both iron and steel has not improved, and if anything is more likely weaker. The general inactivity in machinery and building circles has withheld considerable business from the foundries, and most of the plants are running irregularly. Gray iron foundries are probably duller than steel casting plants, but all could take on a great deal more work. Prices continue more or less irregular, particularly for gray iron castings where desirable orders govern the price to a considerable extent.

Machinery and machine tool dealers have only had a fair month. The demand has been irregular, consisting of a single tool or so distributed here and there. Few, if any, large sales have been made, but from the nature of the inquiries, dealers view the situation in a more favorable light. The smaller engine and boiler manufacturers and dealers report a quiet month. The demand in these lines, it is said, has declined. Inquiries at present are not very promising, but an improvement is looked for during the coming month.

Prices for tools and machinery are more or less unsettled. In some classes of goods considerable cutting is apparent, while in others it is said that prices are being strictly maintained. Active competition and large stocks still confront the probable buyer, and in many cases concessions are, no doubt, conceded in preference to losing a sale.

I. H. Johnson, Jr. & Co., Incorporated, has noted an improvement in the demand for lathes. Inquiries have been better, and have resulted in several nice orders during the past month. They have also delivered a number of various size standard lathes to local as well as out of town parties.

P. Hollingsworth Morris, manufacturer of special machinery, has had a good volume of new business during the past month. Sugar machinery and special machinery have predominated among the orders. The plant is now operating full time, and from present indications will have to go on overtime in the near future. Mr. Morris considers the outlook for further business very promising.

The Standard Roller Bearing Company will erect a one-story machine shop, 103 x 240 feet, for which the contract has been let. This is the third building which has been added to its plant in the last year or two. The new addition above mentioned is virtually an addition to the machine shop erected last year, and will make one large shop, 440 x 103 feet, and under one roof, the construction of which will be on the latest saw tooth plan. The Standard Roller Bearing Company's rapid growth has compelled it to make numerous improvements to its plant so that its works now cover a floor space aggregating nearly 3 acres.

H. B. Underwood & Co. continue fairly busy, the demand for railway shop tools continues good, and some nice orders have been taken. Inquiries, on the whole, have improved, and the future conditions of trade are considered more favorable. There has been some new foreign trade, and other orders for export are in sight. They have shipped recently a portable boring bar and portable crank pin turning machine to a railroad company in Mexico, and also made deliveries of portable tools to various Southern and Western railroads for use in their various shops.

The Nazel Engineering & Machine Works report an increased demand for their portable drills and improved centering and drilling machines. Among recent shipments were some to Cleveland, Ohio; Chicago, Ill.; Milwaukee; Dallas and Galveston, Texas; San Francisco, Cal., and Seattle, Wash., as well as to local and nearby parties. They also advise us that the demand for special machinery for which they have special facilities has improved.

The Philadelphia Roll & Machine Company has shipped a number of both sand and chilled rolls to the various local and nearby steel and iron plants. A fair demand for rolls continues, although other classes of machine castings and special tools continue quiet.

The Eynon-Evans Mfg. Company has the new foundry addition to their plant (which has been previously mentioned in these columns) about 75 per cent. completed. Details as to furnaces and several other matters are, however, yet undecided. This company notes an increase in orders received during the past month for pattern work. The machine shops, however, continues only fairly busy, while the foundry has a good share of orders for brass and bronze castings.

The Espen-Lucas Machine Works have noted no material improvement of business on the whole. A fair number of inquiries for cold saws and other tools are being received, a number of which have resulted in orders. Some recent deliveries include two I-beam machines for parties in the central and western parts of the State. Several steel foundry saws have also been delivered. The past month's demand, it is said, has run largely to the latter class of machines.

The Philadelphia Pneumatic Tool Company is busy. Nearly all departments of the company's plant are being worked overtime, in order to meet the demand for their tools. Orders both in this country and abroad have improved. In the foreign demand England leads, followed closely by Germany and Italy. There has been an improvement in all branches of consumption in the domestic field, except shipbuilding, which remains quiet. Foundries have taken a num-

ber of rammers, while drills which until this time, we are advised, have been held up with patent litigation, will be shipped after September 1 to many customers, who have placed orders for them.

Lovegrove & Co., Incorporated, has found no material improvement in the past month's business, the demand is weak, but some fair business has been taken. They have recently finished the installation of a very complete plant for the A. Colburn Company of this city, consisting of two 100 horse-power horizontal tubular boilers and a 150 horse-power Knowlson & Kelley Corliss engine. Lovegrove & Co. made the complete installation, which, owing to the peculiar conditions of location, made it quite an engineering problem.

Business continues very much the same with the American Pulley Company. Buyers take pulleys in a hand-to-mouth manner, stocks on hand being reduced to a minimum. The number of orders received is about as usual, but lack quantity when compared with those of some months ago. There is no improvement in foreign demand, exportations, however, continue in varying quantities to New Zealand, Australia and European countries. Domestic deliveries made recently include shipments to the South and West, as well as nearby consumers.

The Tabor Mfg. Company has had one of the best months in its history. There has been an excellent demand for molding machines and for its new Taylor-Newbold saws. The South and the West have been foremost in placing orders for molding machines, one party in the former territory having just placed an order for five machines. Foreign demand holds its own with England furnishing probably the greatest amount of orders. Two machines, one a large power ramming machine for journal bearings, the other a jar ramming machine for oil boxes, were recently shipped to parties in Brazil, and a number have been furnished domestic purchasers. Shipments of Taylor-Newbold saws include two—repeat orders—for the Standard Steel Works, Burnham, Pa.; one saw each for the Boston and the Washington navy yards for the Government, and one for the Erie Forge Works, Erie, Pa.; the American Car & Foundry Company, Berwick, Pa.; Geo. V. Cresson Company, Philadelphia, and the Chrome Steel Works, Chrome, N. J., have also been furnished with these saws.

The Energy Elevator Company finds a slight decline in new business during the past month. It, however, keeps quite busy, and has hardly caught up with orders on its books. The demand at this time seems confined almost entirely to freight lifts of the medium and heavy class. Recent deliveries of freight elevators have been made to customers in Haver de Grace, Md.; Sharon, Ga.; Montpelier, Vt.; Hollandale, Mich.; Stockbridge, Mich.; Egg Harbor, N. J.; Meriden, Conn., and Haubstat, Ind., as well as to numerous local and nearby parties.

The Baldwin Locomotive Works has not found any material improvement in business during August, while there is usually a falling off in demand for locomotives during the summer months, the past inactivity is felt more by the fact of their not having large orders for work ahead. They have recently closed contracts with the Southern Pacific Railway for 25, and with the Central Railroad of Georgia for 20 engines; these each include engines of freight, passenger and switching types. There is a right fair demand for electric engines, and orders for these from individual concerns are to be noted. Recent deliveries by the Baldwin Works include shipments on account of orders from the Atchinson, Topeka & Santa Fé, Lehigh Valley, Atlantic Coast Line and other railroads, as well as to a number of individual purchasers.

Birmingham.

BIRMINGHAM, ALA., August 29, 1904.

The miners' strike continues to be the storm center of interest, and it is growing. Within the past few days there have been some few acts of violence and there has been some shooting which terminated fatally. In one instance houses occupied by nonunion miners were blown up and the occupants given a bad shaking up. Fortunately in that case no lives were lost. The object of these acts is to intimidate the nonunion miners and prevent new men from going to work. The mine operators have been greatly stirred by these lawless acts and have offered very substantial rewards for information that will lead to conviction. There can be no doubt that the officials are laboring to avoid all infractions of the law, and the most influential among them are working to the same end. The tug will come when the various companies demand the possession of their houses, and this is mighty near at hand. All the operators assert that they have made progress in obtaining labor and in turning out Coal, and there is no reason to doubt it. But the amount turned out is far below the normal output. The miners assert that the operators have made no headway and what they gain at one place they lose at another place, so it is very hard for an outsider to come to an intelligent conclusion on this point.

The quietude of the market and the reported small sales indicate the condition of the market. None of the principal firms report any sales of consequence, and some of them are simply holding off and declining business, except where old customers are to be supplied. There were some sales of No. 1 Soft at \$10, and a few of No. 1 Foundry at the same price. Some No. 2 Foundry went at \$9.50, and no one will acknowledge sales at less. Some No. 3 Foundry went at \$9.25, but only to a limited extent. No. 4 Foundry was sold at \$9. Gray Forge sold at \$8.75, but it is hard to get at that. Owing to conditions prevailing it is difficult to get lots of any magnitude priced. When the price is named it is with hesitation.

It was thought that by the end of this month the miners would be going back to work. In some cases they are. But the majority are holding out, and think they will win the fight. A very prominent official in a leading interest said to your correspondent this morning: "It would not surprise me a bit if we had a three months' fight of it before we got affairs regulated. But when they are regulated they must be our way." As has been stated heretofore, there is a better understanding between the furnace interests than has existed heretofore, and in the settlement that will be made they will stand shoulder to shoulder.

The New York Machinery Market.

NEW YORK, August 31, 1904.

In view of the fact that the month just closing marked the very high of summer, a period during which under any conditions an absence of business is excusable, some of the reports to be heard in the machinery district concerning August's business history are most interesting. We refer to the surprisingly large number of statements to the effect that despite the many discouraging influences August showed a gain in actual business, not only over the preceding month, but also over any of the last three months. Furthermore, these statements all hold that the increase in business was not due to the placing of any individual contracts of unusual size, but, on the other side, the month's business was made up entirely of a large aggregate of small orders. This, it is held, indicates a general improvement in conditions, which has worked up so gradually but steadily that it was scarcely detected until machinery merchants commenced to look back over the month's business collectively and view it from the standpoint of totals rather than individual sales.

The machinery trade has so many very large projects held in abeyance before it that its leaders have been focusing their attention upon them and have failed to notice the little orders that were gradually accumulating down below their upturned countenances. In their skyward gaze they were disappointed, for the big things, though held aloft by the slenderest threads, failed to drop. Now, however, that it has become necessary to view the net results of the month, instead of viewing the dismaying spectacle which it was thought would present itself an aggregation of little surprises was discovered which utterly changed the ideas of several merchants regarding existing conditions.

Reports concerning inquiries show an improvement in this respect, which lends additional color to the optimism referred to. The concensus of opinion throughout the machinery trade is to the effect that business has suffered less interruption due to the approaching political campaign than has been the case immediately prior to any national contest of recent years. We have been unable to learn of any purchases which have been deferred pending the settlement of the Presidential campaign. While the recent lack of orders has certainly been conducive to price cutting, values have not suffered as severely as might be expected. Concessions have doubtless been given on all sides, and in certain lines great hunger for business has been evidenced by the prices at which the orders were taken, but a broad assertion that prices are demoralized cannot be made. In many quarters of the trade the opinion holds that conservative consumers of machinery recognize that when the large interests come into the market it will be with a rush that will send values upward, and that hence the present offers a good opportunity to quietly supply their wants at bottom prices. Little is heard nowadays about any of the organizations of machinery producers whose aim is to uphold prices.

The week under review has again been devoid of interesting developments in the way of purchases in connection with the several large propositions which have been before the trade for the last few weeks. Regarding the Pennsylvania Railroad tunnel project, the only thing that can be said is that the O'Rourke interests intend placing some of their orders some time during the first half of next month. The Pearson Company has not reached a decision regarding any further purchases of mechanical apparatus. Possibly one reason for the delays incidental to the placing of contracts connected with this project is the severity of the contract with the Pennsylvania Railroad Company under which the two great contracting concerns are working. They are heavily bonded to perform the work along certain lines, and it is but natural that they should endeavor to place the same

exactions upon the recipients of any subcontract which they make or upon any one furnishing any of the machinery or materials entering into the work.

As an evidence that matters are progressing favorably in connection with the contemplated improvements of the New York Central, New York, New Haven & Hartford Railroad interests at New York, President Charles S. Mellen of the New York, New Haven & Hartford Railroad Company made a statement on Monday last to the effect that \$8,000,000 or more is to be expended by his road on its end of the work. He said that plans have been made and estimates submitted for six-tracking the Harlem branch of the New Haven Road, running from the Harlem River at Willis avenue and 133d street, the end of the Second avenue system, to New Rochelle. The work awaits only the formal approval of the State and city authorities. The directors of the road are now considering a further plan for a branch from West Farms along the Bronx valley to Woodlawn, in the southern part of Mount Vernon. A connection with the Interborough system is proposed to be made at West Farms, and it is the plan eventually to give a through service from the Battery to New Rochelle and Mount Vernon. The money for the improvements is to be raised by an issue of \$15,000,000 of bonds, the balance being devoted to the repayment to the New Haven of money advanced during the past 30 years on account of the Harlem River & Portchester Railroad, the titular owner of the Harlem branch of the New Haven. The New Haven has been the only large system in the country without bonded indebtedness, so that the announcement of the proposed bond issue will interest financial circles. The bonds have been underwritten at a premium.

The formal application to the Railroad Commissioners in New York shows that the present estimate of the cost of the improvements is \$7,701,891, but it is expected that this will be exceeded. According to Chief Engineer C. M. Ingersoll's report, the cost of six-tracking, eliminating grade crossings, and constructing new stations will amount to \$4,825,891. B. F. Simmons of Boston, assistant chief of the electrical department of the road, estimates the cost of this branch of the work at \$2,876,000, distributed as follows:

Seventy cars equipped with electricity, complete.....	\$750,000
Four third rails with top protections, and bonding surface rails with necessary marine cable at draw-bridges.....	415,000
Feed wire, high tension wires and pole line complete.....	338,000
Two sub-stations (complete with electrical apparatus).....	280,000
Power house complete with all material.....	920,000
Car barn complete.....	100,000
Sundries.....	75,000
Total.....	\$2,876,000

It will be noted from the foregoing that the cost of the proposed power station, substations and car barn will aggregate \$1,300,000. This will mean the placing of some very inviting contracts for machinery.

Leading interests in the machinery trade are following this project and its sister project of the New York Central & Hudson River Railroad with utmost care, and one might safely go on the assumption that these matters are moving along more rapidly than surface indications show.

While very little is heard regarding actual preparations toward the building of the Panama Canal, the recently appointed commission is earnestly at work disposing of the preliminaries incidental to beginning the work. Chief Engineer Wallace is now on the isthmus going over the scene of operations. No one seems to know just when he will return, and it is very apparent that ever since his appointment he has not been overanxious to have his whereabouts known. Preliminary purchases are now being made by the commission, but up to date they have been chiefly in the way of medical and other supplies for the betterment of sanitary conditions on the isthmus, stationery and other sundries. Nothing is being done as yet with the mechanical end of the undertaking, at least so far as purchases are concerned. The commission is making its purchases through the Panama Railroad Company of 24 State street, New York. Alfred Henderson, who is purchasing agent for the latter concern as well as the Panama Steamship Company, is giving his personal attention to these purchases.

An interesting report is going the rounds which states that interests identified with the Pressed Steel Car Company are completing details of organization of a Canadian car company which is to build extensive works at Montreal. According to press reports W. P. Coleman, formerly second vice-president of the American Car & Foundry Company, is one of the prime movers in the new company, and J. A. Blair of New York and F. N. Hoffstott, president of the Pressed Steel Car Company, are to be directors in the new company. It is reported that the Canadian concern has been assured of a large contract from the Grand Trunk Railway system for car equipment. At the offices of the Pressed Steel Car Company and Blair & Co. it was stated yesterday that the parties reported to be identified with the movement were out of town.

The Buffalo, Rochester & Pittsburgh Railroad will build a new boiler shop, 140 x 300 feet, at Du Bois, Pa. When this addition is completed the Du Bois shops will have a capacity for turning out an engine every 36 hours.

H. C. Hequembourg, general purchasing agent for the American Locomotive Company, Schenectady, N. Y., advises us that the company is enlarging its plant at Montreal, and is putting it in first-class condition to take care of the Canadian business. It will be recalled that this plant was erected and equipped recently by the Locomotive & Machine Company of Montreal, and was recently taken over by the American Locomotive Company.

A new company, having the style of the S. & S. Supply Company, S. A., has begun business at Apartado 2391, Mexico, D. F. The lines which it is intended to handle will include heavy machinery, tools and equipment for mines, railroads, smelters, &c. Arthur H. Le Hand, formerly buyer for the old export house of Ward & Huntington of New York, and recently the manager of the Mexican branch of E. D. Leeper & Co., is to manage the new company. Mr. Le Hand advises us that he is desirous of receiving catalogues and price-lists of American manufacturers who are interested in developing their Mexican trade. Mr. Le Hand says: "It may interest some of your readers to know that we are going to devote ourselves principally to going after the trade of the railroads and mines direct, instead of through the jobbers here. We propose to advertise and send men throughout the Republic, in order that we may keep in close touch with the situation, and not be obliged to depend upon the merchants who are interested in a great many different lines. This is of particular importance in the introduction of machines and supplies that are new to this market. In order to bring them properly before the buyers it is necessary in many instances to go into the shops and make practical demonstrations. The merchants, as a rule, are unwilling to take up any article that there is not already a demand for. It will be our purpose to create the demand. It is not generally known, but there are more than 50 steam railroads in Mexico, and this is one of the greatest mining countries in the world."

An order for the equipment for a very large saw mill to be erected by the Insular Lumber Company in the Philippines has been secured by the Clark Bros. Company, Belmont, N. Y. The Insular Lumber Company is capitalized at \$400,000 and has an extensive tract of valuable timber land, extending 70 miles along the Guimagon River, and containing large quantities of soft mahogany. The better grades of timber will be brought to the New York market. The following prominent business men are interested in the company: A. B. Johnson, formerly Vice-Consul at Amoy, China; C. E. Sherman of Long Island, N. Y.; C. A. Nicola, Geo. W. Kinney and H. F. Lyman of Cleveland, Ohio; S. H. Chisholm, vice-president of the American Steel & Wire Company, New York; W. F. Champney, vice-president of the Eberhart Mfg. Company, Cleveland, Ohio; W. P. Clark, president Clark Bros. Company, Belmont, N. Y.; Delos Dolliver, Saginaw, N. C.

Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until October 1, to complete the concrete and stone drydock at the Mare Island navy yard.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until September 17 for three electric dock capstans, with 15 horse-power motors, for the Boston navy yard.

The following awards have been made for machine tools for the Portsmouth, Boston, New York and League Island navy yards under bids opened August 9:

Niles-Bement-Pond Company, New York, class 9, one triple column outside molding machine, electrically driven, \$1365; class 12, one 20-inch, electrically driven, cut off sawing machine, \$221; class 14, one 16-inch, electrically driven, swing cut off machine, \$216; class 15, one new automatic saw setting machine, \$71.50; class 16, one perfect knife balancing machine, one combination adjustable saw set, one new automatic saw setting machine, and one improved matcher cutter setter, \$161.50; class 18, one vertical drilling machine, electrically driven, \$315; class 19, one wood boring machine, electrically driven, \$695.50; class 20, one tenoning machine, electrically driven, \$392.

Manning, Maxwell & Moore, New York, class 13, one chain saw mortising machine, 13 inches, electrically driven, \$1025; class 33, six 7 x 10 inch single drum steam winches, \$3270.

Hendey Machine Company, Torrington, Conn., class 1, one new model 14-inch swing, 6-foot bed, gibbed carriage engine lathe, electrically driven, \$750.

Berlin Machine Works, Beloit, Wis., class 2, one four-roll single surface planer, electrically driven, \$773.45; class 3, one four-roll single surface planer, electrically driven, \$773.45; class 4, six-roll double surface planer machine, electrically driven, \$1764.

Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., class 5, one 30-inch automatic knife grinding machine, electrically driven, \$311.50; class 6, one 30-inch automatic knife grinding machine, electrically driven, \$311.50; class 7, one electrically driven grinding and polishing machine, \$198.

Marcus B. Tidey, Newark, N. J., class 11, one new pat-

ent combination saw and dado machine, electrically driven, \$448.50.

Camden Iron Works, Camden, N. J., class 17, one hydraulic bending machine, \$1160.

Warren Steam Pump Company, Warren Mass., class 22, 20 vertical single double acting feed pumps for steam cutters, \$1134.

Apex Equipment Company, New York, class 26, one four-wheel, saddle tank, switching locomotive, \$3500.

Eli H. Allen, Boston, Mass., class 27, material and labor for modifying and reinstalling the systems for disposing of dust and shaving of building No. 36, \$1500.

Class 24, one steam and hand steering engine, will be purchased in open market. No awards have been made for class 8, one outside molding machine; class 10, one heavy power feed cut off sawing machine, and class 25, one warping machine, 12 x 12 inches.

New York.

NEW YORK, August 31, 1904.

Pig Iron.—Some round lots of Foundry Pig Iron have been sold for New England delivery, at prices ranging from \$14.75 to \$15 for No. 2. Among the transactions is one lot of 1600 tons, and another of 1000 tons, the sellers being Southern, Pennsylvania and Buffalo makers. We continue to quote for Northern brands \$14.75 to \$15 for No. 1 Foundry, \$14 to \$14.50 for No. 2 Foundry and \$13 to \$13.50 for Gray Forge, at tidewater. Tennessee and Alabama brands are \$13.25 to \$13.50 for No. 2 Foundry, and \$12.75 to \$13.25 for No. 3 Foundry.

Cast Iron Pipe.—The largest order placed in this vicinity was for 3200 tons for Jersey City. The bids for the first small lot of Pipe for the high pressure service of New York are to be opened to-day. Carload lots of Cast Iron Pipe are quoted \$25 to \$25.50 per gross ton for 6 to 10 inch and \$24 to \$25 for 12-inch, at tidewater.

Steel Rails.—A moderate amount of business is being done in Structural Sections. The market for Light Rails continues in a very irregular condition and low figures are being made, both for domestic and for export markets. Moderate lots have been sold, delivered at Cuban points, for \$23, while \$18 to \$19, at mill, is being done for domestic business.

Finished Iron and Steel.—As we go to press the Beam Association is in session. It is stated on the highest authority that a reduction of somewhere between \$5 and \$6 per ton will be made. A similar reduction is to be made in Plates. We quote nominally at tidewater as follows: Beams, Channels, Angles and Zees, 1.74½c. to 2c.; Tees, 1.79½c. to 2c.; Bulb Angles and Deck Beams, 1.84½c. to 2.05c. Sheared Plates in carload lots are 1.74½c. to 1.85c. for Tank, 1.84½c. to 2c. for Flange, 1.94½c. to 2.10c. for Marine and 1.94½c. to 2.50c. for Fire Box, according to specifications. Refined Bar Iron, 1.44½c. to 1.49½c.; Soft Steel Bars, 1.49½c.

Old Material.—Aside from two lots of 500 tons of Re-rolling Rails at \$10 on the line of the selling road no business of any consequence has been done. The market is lifeless. Quotations per gross ton in New York and vicinity are approximately as follows:

Old Iron Rails.....	\$14.00 to \$15.00
Old Steel Rails, long lengths.....	12.00 to 13.00
Old Steel Rails, short pieces.....	11.00 to 11.50
Relaying Rails.....	16.00 to 17.00
Old Car Wheels.....	10.50 to 11.00
Old Iron Car Axles.....	15.50 to 16.00
Old Steel Car Axles.....	14.00 to 14.50
Heavy Melting Steel Scrap.....	11.00 to 11.50
No. 1 Railroad Wrought Scrap.....	12.50 to 13.00
Iron Track Scrap.....	11.00 to 11.50
Wrought Pipe.....	7.00 to 7.50
Ordinary Light Iron.....	4.50 to 5.00
Cast Borings.....	4.00 to 4.50
Wrought Turnings.....	6.00 to 6.50
No. 1 Machinery Cast.....	10.00 to 10.50
Stove Plate.....	8.00 to 8.50

Metal Market.

NEW YORK, August 31, 1904.

Pig Tin.—Until yesterday the market was very quiet, with a weakening tendency, if any change, but, following upon a sharp advance in London, it turned about completely this morning and advanced with rapid strides. The explanation of this turn of affairs shows that the advance anticipated the appearance of the monthly statistics to-morrow, which, it is said, will show a decrease in the visible supply amounting to at least 1000 tons. This theory, which comes from London, seems to be acquiesced in on this side. At this writing the market is as follows: Spot and August, 27.07½c. to 27.30c.; September, 27.05c. to 27.25c. The London market at the close to-day quoted spot £123 17s. 6d. and futures £124 10s. The arrivals for the month amount to 4080 tons, and it is figured that the afloats aggregate 10,090 tons. The monthly shipments from the Straits amount to 4815 tons, as against 5215 tons for the corresponding period of last year.

Copper.—The market is very quiet, although there has been an endeavor to stir up a little interest and advance prices. The only success which has been met in this direction has been a slight advance in the price of Lake Superior Ingot. Quotations to-day are as follows: Lake, 12.62½c. to 12.75c.; Electrolytic, 12.50c. to 12.75c., and Casting, 12.37½c. to 12.50c. London cables at the close to-day named £57 6s. 3d. for both spot and futures. Best Selected is unchanged from last week at £60 15s. The exports until yesterday amounted to 20,773 tons, and it is expected that they will reach the total of 23,000 tons by the close of the month. A rather unusual occurrence is to be noted in the month's business in connection with a shipment of 1000 tons of Ingots direct from here to China. The demand from Europe, it is said, is not as brisk at present as it has been, but that good sales have been made against September and October shipments. While the quantity to be shipped during those months will doubtless fall short of the shipments of the month just closing, it is predicted that they will be larger than they were during the corresponding months of last year. Concerning the large shipments of Copper from here, it is held in the trade that our present enormous and increasing production should not be lost sight of. Coupled with this it is held that the heavy importations from Mexico and British North America, which amount to about 36,000 tons per month, make it imperative that shipments to Europe continue at their present rate, and that some increase in consumption be noted in order to prevent a rapid and large accumulation here.

Pig Lead.—The American Smelting & Refining Company has announced an advance from 4.10c. to 4.20c. for Desilverized in 50-ton lots. This is, of course, under the usual shipment clause of the company. Strictly spot Lead in small quantities is quoted here 4.20c. to 4.30c. St. Louis telegraphs 4.12½c. to 4.15c., while London cables announce a further decline to £11 12s. 6d.

Spelter.—This metal has undergone a rather startling advance, owing to a reported heavy sale of Missouri and Kansas Spelter to Europe. It is said that about 6000 tons have been sold for shipment to Europe. Spot advanced from 4.90c. to the present price, which is 5c. to 5.12½c. St. Louis telegraphs 5c. and London shows an advance of 3 shillings 6 pence, to £22 16s. 3d.

Antimony.—Demand is light and the market is easier. Cookson's and Hallett's are quoted at 7c. and other grades at 6c.

Nickel.—The usual amount of business is passing and prices are steady, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Quicksilver.—The market is very quiet and weak. Flasks of 76½ lbs. were quoted to-day at \$42, with the prospects of lower prices at any time. London is unchanged at £7 15s.

Tin Plate.—Nothing new has developed in the situation as regards Tin Plate. The market is rather quiet and shows some weakness. The American Sheet & Tin Plate Company is quoting \$3.30 per box, Pittsburgh, for 14 x 20 100-lb. Coke Plates, making the price \$3.49, delivered in New York. The Welsh market is unchanged at 11 shillings 7½ pence.

Iron and Industrial Stocks.

Throughout the entire week iron and industrial stocks have been steady, the market showing a strong tone. Several of the issues showed fractional advances, including principally Sloss-Sheffield and United States Steel. At 2 p.m. on Wednesday the last quotations on active stocks were as follows: Car, common, 4½; preferred, 46¼; Car & Foundry, common, 18½; preferred, 78¼; Locomotive, common, 20¼; preferred, 90; Colorado Fuel, 36½; Pressed Steel, common, 32½; preferred, 76½; Railway Spring, common, 19½; preferred, 79½; Republic, common, 7½; preferred, 43½; Sloss-Sheffield, common, 38; preferred, 86; Tennessee Coal, 45¼; United States Steel, common, 12¼; preferred, 61¼; New 5's, 79¼.

The Standard Chain Company of Pittsburgh has reduced its capital stock from \$3,000,000 to \$800,700. Each six shares of former common stock has received one share of new common, and each 14 shares of old preferred has received one share of new common and seven of new preferred.

Application has been made to the Pittsburgh Stock Exchange to list the securities of the Pittsburgh Trolley Pole Company of that city, which is capitalized at \$50,000, and has been in business for several years.

The Union Natural Gas Corporation of Pittsburgh has decided to issue \$3,000,000 6 per cent. coupon bonds, maturing at the rate of \$300,000 per year from 1907 to 1917. They will be used to take up former bonds and to cancel floating indebtedness incurred for extensions, improvements and purchase of gas properties, mainly in Elyria, Lorain and Findlay, Ohio.

The rail mill at Sault Ste. Marie, Ont., has started.

PERSONAL.

J. E. Galvin, Jr., has been appointed superintendent of the Pittsburgh works of the American Steel Foundries.

Joseph Wharton, founder of the Wharton School of Finance of the University of Pennsylvania, at Philadelphia, has increased its endowment from \$200,000 to \$500,000.

W. Wilkens has been appointed manager of the Ashland Iron & Steel Company of Ashland, Wis., operating the Hinkle Furnace.

John Howat has resigned the position as general superintendent of the Sharon Steel & Iron Company, Sharon, Pa., to become mechanical engineer for Dillon-Griswold Wire Company, Sterling, Ill.

European steamers brought home this week a number of officials of the United States Steel Corporation, among them being Henry C. Frick, Judge E. H. Gary, W. T. Graham and Millard Hunsiker.

E. C. Hanrahan of Chicago, secretary of the Western Association of Stove Manufacturers, has been appointed a member of the Jury of Awards at the Louisiana Purchase Exposition.

Everett B. Webster of Boston, president of the National Steel & Wire Company, has returned from England. It is reported that his mission was the consolidation of the English interests in the company into the voting trust with H. E. Huntington, Ogden Mills, and Henry W. Monroe as trustees, which mission was a complete success.

Harry M. Pfleger has resigned his position with the American Steel Foundries to accept a position with the Commonwealth Steel Company, of which company he was elected vice-president at the meeting of the directors on August 22, 1904. Mr. Pfleger was for many years mechanical superintendent of the Pullman Company at Chicago, and afterward vice-president of the American Clock Company at Chicago. He will direct his attention to the sales department, and have his headquarters at the Commonwealth Steel Company offices, in the Bank of Commerce Building, St. Louis.

OBITUARY.

EDWARD ATLEE SCHOEN.

Edward Atlee Schoen, aged 38, who, with his father, Charles T. Schoen, perfected the steel car, died on Wednesday, August 29, at Saranac Lake, N. Y., of a complication of diseases. Mr. Schoen had been ill for a year. Mr. Schoen entered business with his father in Philadelphia a number of years ago when the making of steel car shapes on a small scale was begun. Mr. Schoen and his father enlarged the business, and about 1890 built a plant in Lower Allegheny, known as the Schoen Pressed Steel Company. The business was confined almost exclusively to the pressing of trucks for wooden freight cars. The business grew and the company in 1895 made the first pressed steel car. When Andrew Carnegie built the Bessemer & Lake Erie Railroad he ordered an equipment of steel cars, which gave the company a start. The company was absorbed by the Pressed Steel Car Company, which took over nearly all the pressed steel car plants in the country. Mr. Schoen became general manager and vice-president of the company, but resigned several years ago because of ill health.

NOTES.

VOLNEY W. FOSTER, the Chicago author of the arbitration bill which was referred to editorially in *The Iron Age* some months ago, died suddenly August 15. Mr. Foster was President McKinley's representative to the Panama Congress held in the City of Mexico some years ago, and was deeply interested in Mexican affairs, having founded an archaeological and ethnological society, the prime purpose of which was to study into Mexican history.

FREDERICK HUND, vice-president and treasurer of the Wheeler & Wilson Mfg. Company, died on August 27 at his home in Bridgeport, Conn., aged 72 years.

JOHN BROOKS YALE, formerly New York agent for the

Illinois Steel Company, and a son of Linus Yale, who invented the Yale lock, died August 29 at his home at Sparkill-on-the-Hudson. He was born in 1845, near Cooperstown, N. Y., and became an expert mechanic. His career covered a variety of steel and iron enterprises in the 40 years of his business life. Five years ago he retired from business on account of ill health.

To Test High Speed Steels.

A notable feature of Machinery Day at the Louisiana Purchase Exposition will be that of the high speed steel cutting contest, which is arousing much interest throughout mechanical circles.

This test will take place at Block 9, Machinery Hall, commencing at 10 o'clock in the morning, September 10, 1904. Nearly all of the high speed steel manufacturers of the world will be entered in this contest, and it promises to be very interesting. The contest will be decided by a party of three judges, one selected by the steel men, one by the railroad men and the third by those two. The test will be made both in solid forged tools and in the Armstrong tool holders. The size of steel to be used in the solid forged tools will be $1\frac{1}{2} \times 2\frac{3}{4}$ inches, and in the Armstrong tool holders 1×1 inch. The test will be made on the new motor driven high speed steel lathe manufactured by the Putnam Machine Works, Fitchburg, Mass.

The materials to be used will be steel forgings and cast steel columns. The cut will be $\frac{3}{4} \times 1\frac{1}{2}$ inch reduction, 3-16-inch feed, 100 feet per minute, to be run as long as the tool will stand up. The amount of metal removed will be one of the points to decide the quality of the tools. The steel to be used in this test will be that which is regularly offered by the steel men on the market. The tools will all be forged, tempered and ground at the Exposition grounds before a committee appointed for that purpose.

No two representatives can represent the same brand of steel, and the steel men will give their test in rotation as they may draw their names, which will be placed in envelopes in a box for that purpose. Complete record of every test will be given to each contestant, and shall be signed by each of the judges. This test has the appearance of being one of the most interesting of its kind that has ever taken place in this country.

The Molders in Cincinnati.

(By Telegraph.)

CINCINNATI, O., August 31, 1904.—The difficulties between the iron molders and foundrymen are still unsettled. The ground of contention between them is based on an alleged violation of the New York agreement, which requires employers to give 30 days' notice of any proposed reduction in wages. In the present instance but 15 days was given, and hence the controversy. At a meeting of the foundrymen on Monday the correctness of this claim was acknowledged, and they agreed to restore the cut and pay last year's full scale of wages for the month of August up to September 1, and repay the men what had been deducted from their wages on the cut basis. They insisted, however, that owing to the depression in business and the general condition of the foundry trade, they could not continue this scale, and that the reduction should become effective September 1. This was the only concession they would make, but they asserted that there was no desire on their part to promulgate the open shop plan. Last night the molders held a large mass meeting at Workmen's Hall to learn the result of the conference. Many favored an immediate strike, but cooler counsels prevailed, and after much discussion it was decided to present the following ultimatum to the foundrymen: "The molders agree to accept the cut if a straight nine-hour day is guaranteed, or, in lieu of this, the old wages are to remain in effect with a ten-hour day. In the event of a refusal to accept either proposition a strike will be declared."

It is confidently expected, however, that all will be settled peaceably, as there is scarcely any doubt but that the foundrymen will accept one of the propositions presented.

HARDWARE.

WITH the entrance on September and the passing of Labor Day, which seems to put a formal close to the vacation period, the regular activities of business will be resumed and things assume their wonted course, after the disturbance connected with the summer months. The relaxing of the high pressure under which work is usually conducted, which comes fittingly in midsummer, when effort is specially exhausting, and when consequently the let-up in activities permits a general slackening of the pace, should give a preparation for the tasks which are to be again taken up. There is presumably renewed strength enjoyed as a result of rest and recreation, so that with fresh vigor and in better nerve and heart there is a resumption of the duties, pleasurable and profitable it may be hoped, which fill so large a part in the activities in the business year.

In addition to this obvious advantage of the vacation period, those who have made best use of it should come back to their work in such a spirit and in such an attitude of mind that they are, if charged with any considerable responsibilities, able to look upon their work with a fresh intelligence and a more adequate judgment of its tendencies and requirements. While away from the post of duty, even though business was wisely to a great measure discharged from thought and consideration, there has been an opportunity to look at it from a distance, taking in its perspective, and seeing it in something the way that it must appear to others. This looking down at the work as if from an altitude—this ability to regard it calmly and even critically, as if it were the work of another—this recognition of it in its relations to other activities and interests, should enable the manufacturer or merchant to give better judgment and renewed enterprise and enthusiasm to the tasks awaiting him. Obvious defects and limitations, but half recognized or admitted in the hurry and pressure of daily routine, come into prominent view. Opportunities but half improved make their call for new attention and effort. A spirit of discontent and restlessness will perhaps be rebuked and the new work taken up with new zest and hopefulness, so that in one way or another a more healthful and earnest spirit is brought into the daily tasks, contributing alike to the satisfaction with which they are performed and the success which crowns them. Thus, the time spent in vacation should not only give pleasure, with the exemption from the cares and weariness of the work which fills the busy days and months, but should enable the worker to begin anew with a more energetic, cheerful and intelligent spirit.

If for any reason the leaving behind of the cares of business has not given this spirit and these clearer and broader views, or if circumstances or force of habit have forbidden the enjoyment of these permanent benefits which come from rest and recreation, it is the part of wisdom for those charged with responsibilities to see to it that they escape in some way the benumbing and belittling influence of an unremitting application to the routine of work, and manage to look at their duties with fresh interest and constantly renewed enthusiasm.

Condition of Trade.

There is no doubt that the things which have been happening in the iron market, and the popular discussion of the subject in the papers, together with the open reduction in the price of Wire and Wire Nails, have had a

repressing influence upon trade. Buyers are cautious and purchasing in most lines only for early requirements. There is naturally a good deal of speculation and discussion as to what the course of the market will be and as to the extent to which the weakness which characterizes several lines of heavy goods will become evident in other lines which are still held with regularity. The market, however, is apparently a buyers' market, and good orders in a good many lines would receive careful consideration from manufacturers, and might be placed at slight concession from regular prices. The volume of business transacted by the retail houses throughout the country continues on the whole very satisfactory, and there is little reason to complain on account of general conditions. The reports from the South are in many respects especially gratifying. While the railroads of the country naturally show an indisposition to purchase rails at present prices, they have been liberal purchasers of material for both track and car repair work, and the activity in telephone and telegraph construction has given an excellent volume of business to manufacturers of these lines. Agricultural Implement manufacturers, too, are many of them consuming more material than usual. The trade in Tools and Builders' Hardware is unfavorably affected by the prevalence of strikes, which have also influence in diminishing the general movement of merchandise. There is but little complaint in regard to collections, and foreign trade, notwithstanding a falling off in the demand from some markets, shows, on the whole, a gratifying increase over former years. An important feature of the situation is the fact that the election promises to have little effect in disturbing business.

Chicago.

The time is arriving when large Hardware contracts for a number of down town office buildings are being placed. Orr & Lockett Hardware Company secured the contract for Hardware for the Heyworth Building, being erected by Otto Young, at Wabash avenue and Madison street. They will supply P. & F. Corbin Hardware on this contract. The same dealers have secured the contract for Hardware for the addition to the Rialto Building, aggregating about \$5000. The Stebbins Hardware Company has been awarded the contract for Hardware in the Strong Building, at State and Adams streets, and will supply Corbin Unit Locks of a special design. The contract aggregates about \$5000. Builders' Hardware in general is active, and estimators are kept busy figuring on plans not only for such large buildings as we have named, but for a great multitude of flat buildings, stores and residences. Prospects are that the Builders' Hardware trade for the last quarter of 1904 will be larger than for a similar period at any time in the past. The wholesale slaughtering of Nail prices has not increased buying on the part of retailers, although a larger tonnage is certainly moving than before the cut. Large jobbers who placed orders of considerable magnitude state that they are experiencing some difficulty in getting deliveries from the mills. Wire Fence and Poultry Netting are being cut in price, following the cut in Wire. Apparently nothing has been done by members of the Cut Nail Association thus far to meet the present cut, and no action is expected until their regular meeting early in September. The cool weather of the last few weeks, particularly the cold nights, has resulted in a larger volume of orders for such fall goods as Stove Boards, Pipe, Elbows, Coal Hods and Registers than is ordinarily booked as early as this, and dealers are beginning to clamor already for deliveries. The demand for Corn Huskers and Corn Knives is increasing, and will be exceptionally large unless the corn crop is injured by early frosts. Another 10 per cent. cut in prices has been made in heavy Hammers and Sledges. Demand for Skates and Snow Shovels has not yet developed, and will not for some time, as these are stocks that depend so intimately on climatic conditions that deal-

ers are slow to place their orders. If weather conditions the coming winter are such as to make a demand for these lines the buying movement will be heavy, as the unusual snow fall and the exceptionally cold weather of last winter cleaned out the retail stocks all over the West and Northwest. Hardware business in general is encouraging.

Boston.

BIGELOW & DOWSE COMPANY.—Trade conditions in New England show a slight improvement. The cool weather for the past two weeks is a gentle reminder that the fall is near and winter is not far away. Influenced by the weather, the salesmen are booking usual orders for fall delivery for Skates, Sleds, Snow Shovels, Axes, Stoves and other fall and winter goods.

The decline in price of Wire Nails, &c., came at a time when stocks are light, and many are taking advantage of what appears to be a low price. Unless there is a marked decline in steel billets it is impossible to produce Wire and Wire Nails at the price ruling to-day. The present conditions were brought about by encroachment of the smaller mills on the trade of the larger interests. While there was a small margin of profit these conditions were likely to increase, until it became necessary that the larger interests should have the matter settled as to who is the dominant factor, and to settle this once for all the cut in price was made. As a rule the trade should feel that the reduction came at a good time, when stocks are light and before the beginning of the fall trade. It should stimulate confidence in the future. There are no present indications that the price of Wire goods will have any material effect on the prices of general Hardware. Before this cut was made many lines of Heavy Hardware had been materially reduced in value.

During the Grand Army encampment two weeks ago Boston was the Mecca for old soldiers from the whole country. Everything was full and hundreds of thousands crowded the streets. The latchstring was outside and the reunion of old veterans was inspiring. The crowd was great, but the arrangements were perfect and all were well cared for. A pleasant feature of the occasion was the presence of many prominent Confederate officers, who were invited for the first time to a Grand Army encampment, as the guests of Kinsley Post of this city. They have returned to their Southern homes to tell the tale of their warm and heartfelt reception, for war veterans, be they from the North or from the South, met a hearty welcome and all past differences seemed never to have existed. Nothing seemed more eminently fitting than that Boston should be selected for the first mingling of the Blue and the Gray at a Grand Army encampment. This first meeting was such an eminent success, let us hope there may be many more in the future.

Cleveland.

THE W. BINGHAM COMPANY.—The recent reduction in the prices of Nails and Wire seems to have had little, if any, effect on the volume of business done in these goods, although we are having a good, steady trade along this line. Merchants generally are buying for their immediate requirements only, and there is apparently no inclination to speculate in these commodities. A great deal of building is going on here, creating a good demand for Builders' Hardware of all kinds and incidentally helping trade in all lines, as the unemployed in the building trades are few. In this vicinity crops are later than in former years, which fact doubtless delays somewhat the opening of late summer and fall trade, but reports as to crop conditions being in the main satisfactory, we anticipate a good trade when business does open up.

Dealers are somewhat conservative in their purchases just now, apparently believing that their best policy is to buy according to their immediate needs, rather than to anticipate the probable increase in business. However, all things considered, the orders both through salesmen and by mail are coming to us in satisfactory numbers. The assortments are generally good, but quantities are smaller than last year, due, no doubt, to the feeling on the part of the retailers that as the manufacturers are

much more prompt in executing orders given to them, it is not necessary to so carefully anticipate their wants as it was when goods, especially staple articles, were so hard to obtain.

We in this section have been comparatively free from labor troubles, which, of course, has benefited all business. Some minor questions have arisen, but as a rule they have been settled with little trouble and with good feeling on both sides. Collections are quite satisfactory, and, viewing the situation as a whole, we feel justified in anticipating a good business during the remainder of the year.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Public land sales for the fiscal year ending July 1 show that, for the second time, Oregon leads all other States in land sales. This fact, coupled with increased bank clearings last week of 13 2-10 per cent. over corresponding week of last year, shows that we are constantly making decided headway, although business in hand would hardly indicate such an improvement in our material welfare.

Harvest returns from eastern Oregon and Washington are of favorable tenor, but, as is generally the case, not up to optimistic estimates made before cutting of grain commenced; however, high prices now prevailing will dump millions of dollars into that section. As we have heretofore indicated, western Oregon and Washington have not been favored as the eastern section has, owing to the dry weather that prevailed in May, June, July and August. The darkest side of the picture in the Pacific Northwest is the cattle and lumber situation, and until that clears up, with increased demands and higher prices prevailing, we cannot expect any decided improvement in general business.

Nashville.

THE GRAY & DUDLEY HARDWARE COMPANY.—We think that August will prove to be above the average for the Hardware trade in this section, and about equal to August of last year. The crop prospect continues good. We have heard less complaint about the condition of crops this year than ever before. Farm products of every character are bringing a good price, and the agriculturist is happy.

The recent decline in price on Wire and Nails created somewhat of a stir, but the trade seems to be of the opinion that it will not affect the general line of Hardware, as it seems to be only a war between the manufacturers of one class, and when fighting becomes too expensive the manufacturers are usually wise enough to call a council of war and make peace for themselves and trouble for the consumer. With the splendid prospects for business we have in front of us we can hardly contemplate a general slump in price. Collections are good, and we consider our country in a prosperous condition.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The Iron and Steel market is somewhat in the same condition as the stock market seems to be in New York. Nobody is afraid of values as at present indicated, but nobody seems over-anxious to avail himself of them by contracts for future delivery, for all the while there is an abiding faith that the goods will be forthcoming when the time is ripe.

The panics up and down, which affect the speculative markets and put wheat and cotton buzzing in everybody's head, do not affect Steel Bars and Horseshoes, so we Iron and Hardware folk live on in a much more peaceful atmosphere and try to reconcile ourselves to lack of excitement, keeping far away from assignments on the one hand, or from the likelihood of suddenly made big fortunes on the other.

The agricultural prospects and reports are fairly satisfactory in this part of the world. Almost the only drawback are the strikes in the cities. It looks to us as though Mr. Donnelly had nearly got his measure of newspaper notoriety, he and his associates, and when they have the butchers' strike will be declared over. The endeavor to distort it and other strikes into political significance, holding either one party or the other respon-

sible for them, has proven a failure. The struggle is practically for the closed shop on the part of the unions and all that carries with it of dictation, demoralization and oppression in direct form.

Since the reduction in the price of Wire and Wire Nails the orders for these great commodities have been coming forward more freely, as buyers feel that bottom is that much nearer. The drop was quite a surprise to the trade, which looked rather for a slight advance at the approach of the active season. It seems absurd to read the quotation on large section Rails \$28 per ton, and all the small sections for mines and contractors, while quite as difficult to roll and producing much less tonnage, at \$7 or \$8 a ton less.

This will be used as a campaign argument, and to some purpose. At a moderate reduction, say to \$22 or \$23, we have reason to believe that the railroads would buy freely.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—There is nothing new or startling. The reduced prices on Nails and Wire have stimulated sales, both in carload and small lots. The independents do not seem to care to go one better. With a low freight rate, the war is carried into the territory of the Colorado Fuel & Iron Company. Will the contending factions get together and advance prices or must the trade prepare for another slump? Who knows what forces are working behind the veil? In these days, when the control of vast properties is of more importance than the temporary price of their commodities, the average merchant only knows what is coming to him after he gets it.

Fall business in this territory is now under full swing. September promises to be an exceedingly heavy month. Calls for immediate shipment are urgent. South of this city the corn crop is sure. Nothing but a premature frost can injure it in the North. We are working nights, and vacations and days off are among the things that have been.

New Orleans.

A. BALDWIN & Co.—From present indications we look for an exceptionally heavy business during the fall and winter. Orders for all classes of product are becoming more numerous from day to day, and we have about reached the end of the usual summer quietness.

Prices on some lines of product are becoming a little uneven, but as a whole they are being fairly well maintained. Collections are satisfactory.

Baltimore.

CARLIN & FULTON.—The fall season has now opened and merchants, especially from the South, have been arriving in our city for the last few weeks. Favorable prospects for crops throughout our market, with excellent prices for same, are having a good effect upon the buyers, and all seem to be of a cheerful disposition, with bright expectations for business during the coming season.

The increase in the number of local banks throughout the country has been of great benefit to the agricultural sections, especially the South, making them more independent of the large cities in their financial operations and in marked contrast with the condition of affairs a few years ago.

The reduction in prices of Nails and Wire has so far had but little effect upon other lines of goods, and the trade have gotten rather accustomed to fluctuations in these commodities and after a radical decline are never surprised at a corresponding advance.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—The month of August closes with trade conditions practically unchanged from those that have characterized our reports during the summer months. For present consumption the movement of goods is somewhat light, but advance orders booked for later shipment are of a variety and extent that would indicate a run of business of good proportions as the fall season advances.

The harvest of small grains, though disappointing in

quantity, will be offset in a great measure by enhanced values. The weather continues propitious for ripening corn, and every indication points to a very large yield of this important product. The prosperity as well as the financial condition of the trans-Missouri country continues to be on a substantial basis, and although trade conditions in the East are reported as unsatisfactory, it is not expected that they will have any influence on the volume of business in this region.

NOTES ON PRICES.

Wire Nails.—The market has not materially changed since last week, but the effect of the reduced prices is more widely felt. The keen competition, which was responsible, in part, for the recent heavy cut in the price of Wire and Wire products, continues, especially in the Wire Nail market. The largest interest and the independent mills are making practically the same prices in the endeavor to secure business. The condition of the market is peculiar, in view of the unusual inducements which are being made as the result of the desire to induce buying. The Far West is the scene of the greatest activity, as competition there is sharp, and in that territory, as well as in some sections eastward, the usual differentials between the larger and smaller buyers have been practically abolished. The price of \$1.60, base, f.o.b. Pittsburgh, for carloads, seems to be quite generally quoted to both jobbers and retailers. For less than carload lots an advance of 5 cents per 100 pounds is charged by some mills. It is understood that jobbers at Western distributing points are quoting carloads at \$1.65 and in isolated cases at \$1.60, f.o.b. Pittsburgh; also that on shipments some mills are guaranteeing a freight rate from Pittsburgh a few cents less than the full tariff rate. Some Western mills for less than car lots for local shipments are charging but 2½ cents per 100 pounds above carload prices. The mills are not accepting contracts for a longer period than 30 days, and definite specifications must accompany orders. Both the leading interest and the competing mills are holding quite strictly to \$1.60, except in Colorado and adjacent territory, where it is understood materially lower prices have been made. The cut in freight rates in Wire products to this territory, while not unprecedented, has the effect of unsettling quotations and disturbing the market. The increase in demand is not in proportion to the decrease in prices, indicating a lack of confidence in the stability of the market on the part of a majority of the trade. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots	\$1.60
Less than carloads.....	1.65

New York.—The distribution of Nails from this point for the month of August has exceeded that for the corresponding month of last year. A larger increase would probably have been shown had it not been for the disturbance in the local building trades. The past week has shown a falling off in demand which is quite general at the end of the month. New York quotations are as follows: Single carloads, \$1.79½; small lots from store, \$1.85 to \$1.90.

Chicago, by Telegraph.—Although no cut in the jobbers' price seems to have been made in Wire Nails, leading outside producers are selling freely to retailers on the basis of the jobbers' price named by the American Steel & Wire Company, apparently seeking to extend the trade among the retailers. The prices of the American Steel & Wire Company are as follows, f.o.b. Chicago: Jobbers, carload lots, \$1.75; retailers, car lots, \$1.80; retailers, less than car lots, \$2.

Pittsburgh.—As yet the heavy cut in prices of Wire Nails made by the American Steel & Wire Company and other Wire Nail interests late in August has not had the effect of stimulating demand to any extent. On the contrary, buyers are largely confining their purchases to actual needs, fearing that another reduction in prices may possibly be made, but this is hardly probable. It depends

very largely on whether present prices of Billets are maintained. It is pointed out that with the price of Bessemer Billets on the basis of \$23, Pittsburgh, with Nails at \$1.60 per keg, there is only a fair margin of profit to the manufacturer. Should a material reduction be made in price of Billets it might be followed by lower prices on Wire Nails, and for this reason the trade is awaiting the outcome of the meetings of the large Steel interests which have been in session for about a week. A feature of the market is that several of the outside mills are naming the minimum price of \$1.60 in ordinary carload lots, whether the buyers are jobbers or retailers. We quote Wire Nails as follows: In carload and larger lots to jobbers, \$1.60; carload lots to retailers, \$1.65; less than carload lots to jobbers, \$1.65; less than carload lots to retailers, \$1.75.

Cut Nails.—While manufacturers are trying to get as near association quotations for small lots as possible, moderate demand has resulted in shading official quotations according to the size of order and standing of buyer. Carload lots, f.o.b. Pittsburgh, may in a general way be quoted \$1.60 to \$1.65 for Steel and Iron, respectively, but there are rumors of lower prices in some cases. What action regarding prices will be taken at the meeting of the Cut Nail Association scheduled for September 8 is a matter for conjecture.

New York.—During the month the demand for Cut Nails has shown an increase over the usual proportion of Wire Nails. There does not appear to be any definite reason for the change in consumers' requirements. Quotations are as follows: Carloads on dock, \$1.70 to \$1.75; less than carloads on dock, \$1.80; small lots from store, \$1.85.

Chicago, by Telegraph.—No announcement of a reduction in price on Cut Nails has reached the market, and prices are about on the basis of \$1.75 to \$1.80 in car lots and \$1.85 in less than car lots, the proposition to charge full freight from Pittsburgh having ceased to be operative.

Pittsburgh.—A meeting of the Cut Nail Association is scheduled for Thursday, September 8, but whether a reduction in price of Cut Nails will be made is uncertain. For some time Steel Cut Nails have been selling on the basis of \$1.60 per keg, and manufacturers claim that with present high prices of Steel this leaves only a fair margin of profit. Demand is only fair, buyers placing orders only for actual needs and in small lots. We quote Steel and Iron Cut Nails at \$1.60 in carloads and \$1.65 in less than carloads. In exceptional cases and to some points of delivery it is said our lower price has been shaded.

Barb Wire.—Demand has not increased, as might have been expected as the result of the cut in prices. Mills are accepting orders only for prompt shipment. It may be a question whether differentials are adhered to in all cases. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Carload lots	\$1.75	\$2.05
Less than carload lots.....	1.80	2.10

Chicago, by Telegraph.—Business is probably a little better than the corresponding week last year, but not as large as was expected from the great reduction in prices, at least one independent producer giving large retailers the benefit of the jobbers' price named by the leading producers. Quotations are as follows: Car lots to jobbers, Painted Wire, \$1.90; Galvanized, \$2.20. To retailers, car lots, Painted, \$1.95; Galvanized, \$2.25. Retailers, less than car lots, Painted, \$2.05; Galvanized, \$2.35. Annealed Polished Staples, \$1.85; Galvanized Staples, \$2.15.

Pittsburgh.—Mills are entering orders only for prompt shipment at present prices, but there does not seem to be much desire on the part of the large trade to contract ahead, even if the mills would agree to accept such orders. It is pointed out that the relations between some of the larger Wire interests are considerably strained at the present time, and if this condition continues another cut in prices may possibly result. Prices are as follows,

f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.75	\$2.05
Retailers, carload lots.....	1.80	2.10
Retailers, less than carload lots.....	1.90	2.20

Smooth Fence Wire.—Orders covering actual requirements result in a fair volume of business, but lack of universal confidence among buyers restricts the demand which might be expected from the low prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	\$1.45
Retailers, carloads	1.50.

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55	.65	.85
Galvanized....Base.	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago, by Telegraph.—Here, too, an independent producer gives to large retailers the benefit of the jobbers' price named by the leading producer. Business is not as active as it was hoped it would be after the cut in price. Quotations are as follows, f.o.b. Chicago: Smooth Fence Wire, Nos. 6 to 9, \$1.60 per 100 pounds, in carload lots to jobbers; \$1.65 per 100 pounds to retailers, and \$1.75 in less than car lots.

Pittsburgh.—A fair volume of business is being placed, but as a rule buyers are confining orders to actual needs. The impression that present prices may be advanced at an early date is lacking, and, on the contrary, some in the trade believe prices of Wire will be lower before they are higher. In the meantime the outlook is uncertain, as the mills refuse to enter orders except for prompt delivery and will not take contracts at present prices. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	\$1.45
Retailers, carloads	1.50
Less than carloads.....	1.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Miscellaneous Wires.—During the past six months there has been some change in the prices of Market and Stone and similar Wires, and in connection with the recent substantial reduction in the price of Wire Nails and Barb Wire, &c., still lower figures have been developed. The changes which have taken place in this line are not, however, as great as in Nails, Fence Wire, Barb Wire, &c. The general condition of the market on Market and Stone Wires is represented by the following quotations to retail houses purchasing in fair lots:

Bright and Annealed Market and Stone Wire

	Discount.
Nos. 6-9.....	.80 and 5 @ 80 and 7½ %
Nos. 10-16.....	.80 and 5 @ 80 and 10 %
Nos. 17-18.....	.80 and 5 @ 80 and 5 %
Nos. 19-26.....	.80 and 10 @ 80, 10 and 7½ %
Nos. 27-36.....	.80 and 5 @ 80 and 10 %

Galvanized Market and Stone Wire.

Nos. 6-9.....	77½ @ 77½ and 5 %
Nos. 10-14.....	72½ @ 72½ and 5 %
Nos. 15-16.....	75 and 7½ @ 75, 10 and 2½ %
Nos. 17-18.....	72½ and 5 @ 72½ and 10 %
Nos. 19-26.....	75 and 5 @ 75 and 10 %
Nos. 27-36.....	72½ and 5 @ 72½ and 5 and 2½ %

Coppered and Liquor Finished Market and Stone Wire.

Nos. 6-9.....	77½ @ 77½ and 5 %
Nos. 10-14.....	77½ @ 77½ and 7½ %
Nos. 15-18.....	75 and 10 @ 75 and 10 and 2½ %
Nos. 19-26.....	75, 10 and 5 @ 80 %
Nos. 27-36.....	75 @ 75 and 5 %

Tinned Market Wire.

Nos. 6-14.....	77½ @ 77½ and 7½ %
Nos. 15-16.....	75 and 5 @ 77½ %

Rope.—There never was a time in the history of the cordage trade when there were as many grades of so-called Manila Rope in the market. In some cases the proportion of Manila fiber is so small as to be hard to discover. It appears that the trade are largely responsible for this condition, as the high price of strictly pure Manila Rope has created a demand for something cheaper that, by courtesy, could be called Manila. Manufacturers have been obliged by competition to make Rope

that would correspond to the prices jobbers were willing to pay. This is also true of Sisal Rope, but not to so great an extent. Business continues normal. Quotations on the basis of 7-16-inch diameter and larger are about as follow: Pure Manila, 11½ cents per pound; other grades of Manila, 10¼ to 11 cents, according to quality; pure Sisal, 9 cents; mixed Sisal, 7½ cents.

Picks and Mattocks, &c.—The market for Picks and Mattocks and Grub Hoes has recently developed lower prices and is characterized by some irregularity. As lying near the raw material and feeling the effect of somewhat strenuous competition, this line is not in a very satisfactory condition so far as prices are concerned.

Wire Picture Cord.—There is some diversity in the quotations at which Wire Picture Cord is sold, depending largely on the quality of the goods. Standard goods of full length and size naturally command higher prices than brands which do not conform to the standard. This is a matter to which purchasers of these lines should give attention.

Braided Sash Cord.—After some fluctuations and the development of lower prices than prevailing a short time ago, advances of about 1 cent a pound have been made in Braided Cotton Sash Cord. In a general way to fairly close buyers the market is now represented by quotations of 21 to 22 cents.

Glass.—None of the Glass factories have yet fired up, and indications are that no plants are preparing to start during September. A large percentage of the comparatively small stocks of Glass in manufacturers' hands is supposed to be unmarketable, owing to poor assortments, while the stocks of jobbers and dealers are unusually small. No general quotations are being made, but manufacturers require specifications to be submitted before prices are given.

Paints and Colors.—*Lead.*—In territory tributary to this market the jobbing demand for White Lead in Oil shows improvement. In this city labor troubles have reduced requirements to a considerable extent, but consumption is larger than could be expected under the conditions. Large consumers, such as shade and oil cloth manufacturers, have been drawing quite freely on their contract orders. While quotations of some manufacturers of White Lead in Oil are from 6½ to 7 cents per pound, according to quantity, some brands are obtainable at 6¼ cents and upward, according to quantity and terms of sale.

Oils.—*Linseed Oil.*—There is an absence of large orders, but the orders for small lots, covering immediate requirements, constitute a fair volume of business. It is claimed that Oil at present prices is unprofitable to crushers, but notwithstanding this assertion there are rumors that orders for large quantities for immediate delivery and for delivery up to the middle of the month might be placed at figures slightly below present quotations. Quotations are as follows: City Raw, in lots of five barrels or more, 45 cents per gallon; in lots of less than five barrels, 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon. Boiled Oil, the usual 2 cents advance per gallon over Raw.

Spirits Turpentine.—A falling off in price is explained by the supposition that some interest in the South have been obliged to reduce their holdings, and that export demand has suffered as the result of temporary local conditions in one of the foreign markets. At this point the market is dull and inactive, demand covering immediate requirements only. Quotations in this city, according to quantity, are as follows: Oil barrels, 56 to 56½ cents; machine made barrels, 56½ to 57 cents per gallon.

WM. McNIECE, who was a Saw manufacturer in Philadelphia for upward of 40 years, died in that city on August 29. He was stricken with paralysis while in his office at 515 Cherry street on August 6, and died at his residence, 443 Marshall street, as above stated. Mr. McNiece was born in Galway, Ireland, 76 years ago, and although his business was mostly local, he had a wide circle of acquaintances and was universally respected for his sterling qualities and genial disposition.

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ADVERTISING.

BY MARSHALL DE MOTTE.

The subject is not treated in any abstract way, but considered practically, with special reference to newspaper publicity, such as can be used by an ordinary Retail Hardware Merchant.

Third Paper.

HOW TO MAKE YOUR AD. EFFECTIVE.

THERE is a remote kind of effectiveness that some seem to consider the field of an advertisement's usefulness, but I must speak only of the immediate sales of this salesman just as you gauge the effectiveness of your other salesmen. To make the most of your opportunities you should call to the assistance of your ad. salesman other forms of display that, while of high individual value and capable of effectiveness when used alone, are also very valuable auxiliaries when used in connection with your ads.

Of course, every merchant knows that care should be constantly had to watch slow moving articles, and these can always be boosted along with a little special advertising and a cut price. This is one of the strongest incentives for advertising, though if you keep up your ad. work very persistently you will lack fuel of this kind, and will do what is far better, offer what your customers want just when they want it. Don't fall in love with your merchandise and refuse to part with it at a price.

An old merchant once said to me: "Get rid of slow goods; better take your first loss when you can smile than to take the last loss with tears." You will find that your little ad. will help you dispose of many a slow moving line without any loss, indeed often making a blessing out of what looked like a loss by using it as the means of attracting new trade to your store.

BESIDES THE MOVING OF SLOW STOCK

you should use your ad. to call attention to the goods suggested by the demands of the changing seasons. Some large stores advertise at the close of a season to close out the remnants of the season's goods, others advertise in the light of the season to call attention to the season's supplies. I have known more marked successes under the latter than under the former method, and the best merchants do that way.

Let us take up two lines of decorative preparations—first the windows and then the inside store arrangements—as supplemental to the effective working of your advertisements. These two lines of work can be largely done before your ad. is published; indeed, you will often see the windows of a large department store trimmed days in advance of a sale with the announcement that these goods will be on sale in a certain department on a certain day, and people know from experience that it is useless to try to get them in advance of that time. You will find it to your advantage to do just such things even if you have to refuse to sell to some of your personal friends, for it will teach people to watch both your ads. and your windows. If you do not make your display before your sale is open, at least make a display

SIMULTANEOUS WITH YOUR ADVERTISEMENT.

Of course, if you are advertising three times a week you will find it rather hard to make so many trims, though what with window and store trims, you certainly can do something to accentuate each effort for business. It's a temptation to say more about window trimming, but "that's another story," and I'll pass it with the opinion that as a salesman window trimming can be made to produce more business than newspaper advertising for the ordinary store, and that all I have said about care and pains in advertising I should say about window trimming, and more. Just one thing I will say: I have advised that you always put the price in your ads. Let me urge you never to neglect the price in your window trimming, that it may prove a faithful auxiliary.

Under this head let us take up the special arranging

and grouping of the goods advertised in such a way as to readily catch the eye and get the attention of even the most casual customer. This is necessary. Don't say,

Inside Preparations "Why, isn't it enough to advertise them?" If your sole aim is to test the pull of the ad., all right, but if you want to sell goods, no—most emphatically no. A woman will frequently read your ad. and forget all its details until she runs across the goods displayed in your store, when she will say, "Oh, is this the Oil Heating Stove you advertised the other day? Now, really, do you think it's as good as you said?" This gives you an opportunity to talk, and a good opening is half a sale.

IT'S HARD TO INTRODUCE NEW GOODS TO SOME PEOPLE, but you will find that store display will often make effective your ad. by catching the eye and raising a question, and that's the beginning of the end. So I say take particular pains to display the goods advertised. For instance, when you advertise your Oil Heaters bring them out from behind the Cook Stoves and give them a front position for the time being, and put a sign up, "500,000 in use," if you sell that kind, or something of that sort, with the prices. Treat these advertised features as for the day or week, whichever way you advertise them, and then change things around again and give something else its turn. This constant changing relieves your store of monotony. Do you ever make complete alterations in your store arrangements? Well, that's a good plan also. Try it once. Nothing will quicker create the idea that something is doing.

There is one kind of advertising that in some communities is worked to death and can do you little good. That's the hand bill. You know your own town, and to what extent they have been used in the past, so be governed accordingly. If you can use them at all, don't make them common, but get them up in a talky style and see that they are thoroughly distributed.

Outside Preparation The store located in a farming community that lacks a good newspaper and the small store located in the residence district of a great city can often work these hand bills to good advantage, especially when they have something of unusual interest to offer. Here is another outsider that every storekeeper will find of great help: On long, narrow strips of Manila Wrapping Paper, say 9 inches wide, you can print catchy lines, which when run across your windows will be seen at a distance and be very fruitful in results. Say you run a line, "Portable Heat for Sale." Make big, plain letters—not a curlycue in the whole strip—plain enough to be heard. Try this even if you don't use newspaper space.

USE THE SIDEWALK FOR ADVERTISING SPACE.

Try this on yourself; you will see five things on the sidewalk to three waist high, or one eye high. Others are built just like you, and they will see more on the sidewalk than anywhere else. Don't try to say much, just a word or two. "Hot Stoves." ~~2~~1, with the hand pointing to your door. I know a grocer whose catch line is, "That reminds me." This is on his windows, sidewalk signs and on every piece of printed matter he sends out, and I haven't the least doubt that it does remind many a man who is absentmindedly passing his store that one of the last things said to him when he left home was to get certain groceries, which he proceeds to do at once. A catch line could often be used on your sidewalk.

YOU WILL FIND YOUR DELIVERY WAGONS

a pretty good place to put special cards. Instead of paying some clothing merchant half the price of an umbrella with his advertisement on it, you would better pay the whole price and have your own ad. on it. Then you can rig up boards or frames on the sides of the wagon so you can display special announcements of sales. We used to laugh at a Hardware dealer in our town who was selling Red Hot Stoves, and whenever he made a delivery he would decorate his wagon and put up a big placard announcing something like this: "Here goes another Red Hot Stove. It's the only Stove to buy, and Hardware's is the only place to buy it." And he sold more Stoves than all the other dealers in town put together. This same man used also to ring a large farm Bell every morn-

ing and evening when he opened and closed his store. He was peculiar? Why, yes, he was; but it pays to be peculiar when it pays to be so. Excuse me, but I think you see what I mean.

Every pleased and satisfied customer is a stone in the wall of your success. Every bargain given and every value demonstrated is a stone. Every time you show that you do business on principle you lay a broad, high stone.

Walls of Success Good newspaper advertising, effective store display, attractive window trimming and all efforts to attract trade are the mortar to fill in and make solid the wall of the structure you are rearing. These sentences may sound sermonish, but you will find them all practical business phrases also. Build deep and strong.

SEIZE EACH OPPORTUNITY AS IT COMES, WITH YOUR EYE ON THE TOTAL RESULT,

and bind all your acts into one great structure, making no one part independent of another, but each of prime importance in its place. To this end see to it that your salesmen both in and out of your store work for the one goal. Your success will be sure if your methods are right, but wait for that success. Treat with the future, but don't trade on the future. Remember what Shakespeare said, "The man who first did sell the lion's skin was killed in hunting him."

HUSSEY-BINNS SHOVEL COMPANY'S FIRE.

ON Friday, August 25, a fire broke out at the Shovel works of Hussey-Binns Company, at Charleroi, Pa., but fortunately the only part of the plant destroyed was the finished goods warehouse. No part of the manufacturing plant was injured, and the fire will not interfere in any way either with the manufacture or shipment of finished goods, which will proceed as usual. The firm is to be congratulated that the fire did not do more damage, but was confined entirely to the warehouse in which finished goods are stored. The burned portion of the works will be rebuilt as soon as the insurance is adjusted.

TRADE ITEMS.

THE CENTRAL IRON WORKS, founders and manufacturers of Gray Iron Castings, making a specialty of sewer, street and railroad work, who have been operating the Van Wie plant at Syracuse, N. Y., have bought the works formerly occupied by the Economy Foundry Company in that city. They expect to have the foundry in operation about the middle of September with a daily capacity of 50 tons. The Central Iron Works are a firm composed of C. I. Markham, Wm. H. Brown and E. R. Markham. The New York office will continue at 253 Broadway, in charge of C. I. Markham, who is widely known to the trade as having been for some years the New York representative of the Cleveland Twist Drill Company.

THE ONEIDA COMMUNITY, Kenwood, N. Y., the original manufacturer of the Newhouse Steel Traps for catching animals, from the smaller kinds to the largest, has begun the publication of a magazine for the benefit of trappers, called the *North American Trapper*. The number before us is attractively gotten up and appeals to the practical woodsman and trapper, from whom it is expected much practical information will be obtained for publication. All retail Hardware merchants are urged by the publishers to act as its agents with customers, a liberal discount being allowed the former on all subscriptions.

JOHN H. GRAHAM & Co., 113 Chambers street, New York, have been appointed the Eastern and export agents for the Mount Pleasant Tool Company, Mount Pleasant, Pa. This company manufactures a full line of Shovels, Spades and Scoops, and is now in a position to execute orders promptly for goods of this character. John H. Graham & Co. have also been made the sole selling agents for the Staple Puller and Fence Makers' Tool made by the Irvington Mfg. Company, Irvington, N. J.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

BARNEY & BERRY, Springfield, Mass.: Complete illustrated descriptive catalogue of the large lines of Ice Skates made by them. Almost everything made in Skates of this character is shown, from the moderate priced goods for children to the beautiful diamond pointed engraved article for the professional, the line including Rocker, Racing and Hockey styles. Among the additions are a Model B Ankle Support adjustable to Skates and a low priced All Clamp Hockey Skate.

THE COLUMBIA GREY IRON COMPANY, Columbia, Pa.: Illustrated catalogue and price-list relating to Hardware, Iron Novelties, House Furnishing Specialties and Toys. The catalogue shows an increased line of goods, and in some instances a reduction in list prices of former line. An enlarged foundry and greatly improved facilities increase the promptness with which orders are filled.

A. S. MORSS & Co., 210-212 Commercial street, Boston, Mass.: Illustrated catalogue and price-list, devoted to Marine Hardware, Ship Chandlery, Boat Builders' Supplies, Edge Tools, Ship and Yacht Supplies, &c. The firm calls attention to the great variety of its large stock as enabling orders to be filled promptly.

THE LOWRIE SAFE & LOCK COMPANY, New York and Chicago: Concealed Safes, Silver Drawers, Jewel Cases and Boxes, Trunk Safes, &c.

ONEIDA COMMUNITY, Kenwood, N. Y.: Catalogue No. 27A of Hardware products, including Animal Traps, Chains, Dog Leads, Cow Ties, Dog Collars, Silk Threads, Canned Fruit and Vegetables, Silver Plated Ware, &c. This catalogue supersedes all former ones. It is accompanied by an illustrated pamphlet describing Oneida Community from 1848 to 1901.

THE HARDWARE DEALERS' MUTUAL FIRE INSURANCE ASSOCIATION OF PENNSYLVANIA.

THIS association, of which C. H. Miller, Huntingdon, Pa., is president, and W. B. Simpson, Huntingdon, Pa., secretary, has issued a statistical report which covers the operations of the company since its organization, October 1, 1902. This report, which indicates growth and prosperity, bears the date of August 1, 1904, and is as follows:

First Year.	
October 1, 1902, Issued first policy.	
October 1, 1903, Insurance in force.....	\$507,883.00
Deposits	7,760.17
Total losses and expenses, including organization, furniture, supplies, &c.....	2,356.30
30 per cent. of the cost in stock companies.	
Second Year, to Date.	
August 1, 1904, Insurance in force.....	\$789,683.00
Deposits	12,611.34
Total losses and expenses.....	2,007.02
16 per cent. of the cost in stock companies.	
August 1, 1904.—Cash on hand and invested.....	\$11,379.75
Liabilities	None.
Losses unpaid.....	None.
Total paid by members to date, 51 per cent. of Board rates, which includes amount carried to surplus or guarantee fund, according to the by-laws.	

MASON BROTHERS, Weeping Water, Neb., have disposed of the Harness department of their business to H. T. Fisher & Co. and will hereafter devote themselves entirely to the sale of general Hardware.

OSSAWAN MILLS COMPANY, Norwich, Conn., manufacturer of Picture Wire, Picture Hooks and Nails, Brown Solid Braided Mason Line, &c., will be represented by Jesse H. Stanton, as heretofore, and also by C. K. Hutchins, formerly of the Wire Goods Company, Worcester, Mass.

BRITISH LETTER.

The Week's Hardware Trade.

Office of *The Iron Age*, HASTINGS HOUSE,
NORFOLK ST., LONDON, W. C., August 20, 1904.

PRODUCTION is again up to average, but prices show no improvement. Orders this week, both for home and export, have come in more freely, and employment is more abundant. Manufacturers are comforted by the knowledge that stocks are low, and that a slight improvement of demand would make every one busy. Last week I referred to the difficulties arising out of the restriction of orders from the War Office for Rifles. The War Office has now consented to revoke the recent order restricting deliveries to 1500 per week. Ammunition is in tolerably brisk request just now, but the home sporting season so far has not been a particularly active one. The Cycle season is now practically ended, and must be pronounced disappointing, not so much in regard to the number of machines sold as from the prices obtained for them. Competition has again reduced the standard this year by at least 20 per cent., and makers even now have no security that bottom has been touched. The Brass trades have been throughout the summer in a somewhat languid condition, but during the last few days orders have come in for Door and Window Fastenings, Fire Brasses, Fenders, &c., and improvement in the general condition of the trade has resulted. There is considerable activity in the Edge Tool branch, in which Indian and South American orders for Hoes, Axes, Matchets, &c., have been specially satisfactory. In Spades and Forks there is not much doing. For Brazed Tubes the demand is not so good relatively to the great productive power it possesses, but for high conductivity Wire and Tape the demand appears insatiable. There is an improved sale in Stove Grates and Kitchen Ranges.

On overseas account a steady trade is being done with Australia, and the New Zealand business is, as usual, quite steady and valuable. A considerable weight of material has been sent this week to India, and fair quantities of goods have also gone to Eastern ports not affected by the war. The European trade continues quiet, but the South American demand continues good.

A large American firm dealing in Ivory piano keys attended the last Antwerp auction with the intention of buying up every lot of Ivory offered which was suitable for its purpose, in order to crush a rival. Price was no object to it. The Sheffield dealers bid up to what they regarded as a reasonable figure, and then, knowing American methods from past experience, they realized that they had no chance of getting any of the material which was wanted by the Yankee visitors, and retired from the contest. Instead of having replenished their stocks in readiness for the winter trade, therefore, the Sheffield Ivory merchants came back almost empty handed. But for the fact that the Cutlery trade is depressed, and that consumers are neglecting Ivory Cutlery, a failure in the supply of Ivory Handles in Sheffield before the next auctions would have been inevitable. As it is, much inconvenience will be caused, and Cutlery makers must pay more for their hafting material.

THE WALTER W. WOODRUFF & SONS COMPANY'S CATALOGUE.

THE WALTER W. WOODRUFF & SONS COMPANY, Mount Carmel, Conn., has just issued catalogue A, devoted to Automobile Mountings and Specialties. The company's connection with the Vehicle trade, through the accessory lines, since 1835 enables it to bring years of experience to this new branch of its business. The company does all of its work from the casting of malleable iron, brass and composition to the finished article and is not dependent upon outside sources for its goods, thus enabling prompt shipments to be made. New articles along these lines will be produced as demand arises. The catalogue contains 51 pages of illustrations, descriptions and prices.

NEW ORLEANS NOTES.

FROM A SPECIAL CORRESPONDENT.

DISAPPOINTMENT has met the Hardware business of New Orleans during the past three weeks, and all the prophets of conditions are casting about to find out what was the trouble with the prognostications made in the latter weeks of July concerning the situation for the late summer and the early autumn. For three weeks fluctuating and generally declining prices of Nails and other goods close to the raw material, and of nearly all heavy articles, have kept pace with a consistent refusal on the part of the market to show the expected signs of autumn revival or crop moving stimulation. Reasons and explanations galore for this have been advanced, but the trade and the public seem generally at a loss. However, the fact remains that the New Orleans Hardware trade, save in one or two strictly local lines and with the local retailers, is running nothing above the level attained one year ago. This, too, after a spring and early summer business which was fully 25 per cent. better than the trade of a year preceding.

One month ago trade was running even with that of July, 1903, but that was explained on the exceptional conditions prevailing in the lumber belt, and on the fact that the cotton section had overpurchased during the spring. One month ago all said that when the saw mills began operations and the crops were on the eve of moving business would improve vastly; and many said that the autumn business of 1904 would surpass by 10 or 15 per cent. that of 1903. It was urged at that time that the purchasing power of the cotton belt would be as great as it was last year, if not greater; that the cane regions would be in vastly better shape than in ten years past, and that the rice and timber sections would be flourishing. On this was based the optimistic forecast.

The saw mills have started, but the orders for mill supplies have not started with them, nor have the lumber roads begun to restock on engine supplies, &c. Cotton crop forecasts and the market quotations maintain a balance, which still insures good trade from that section. Yet the cotton region of Mississippi, Louisiana and East Texas is not buying the amount of goods which was expected. The cane planters are reveling in the outlook for the best crop since 1895, and the rice planters, while doubtful as to price, are certain as to the quantity of the crop. Yet from neither source have orders come in as large quantities as were anticipated.

TAKEN UP BY LINES,

the Hardware business shows some peculiar features. Building and Household Hardware, which went to the cotton districts in the heavier and cruder forms last spring, has gone back to about the level of last August, before the tremendous boom in cotton and before the remarkable improvement in Hardware business inaugurated last autumn. The cotton planters would seem to have bought all the heavy material they need. Reports from the jobbers and smaller dealers from the Alabama line to Texas are to the effect that the market was overpurchased last spring. And now, when the fall trade in the higher priced articles is due, the planters and all the middlemen are hanging back to "see what may happen." From man after man comes the remark: "I may be able to buy cheaper later on. I would rather keep my stock just running until I see which way the current will turn. The election in November may bring prices down a little lower, when I can stock up for the winter."

The low prices of Nails are no temptation. Sheet Metal Roofing is almost a drug on the market. The better class of articles are rather luxuries than necessities, and the Fancy Iron Fencing, Latches, Knobs, Fittings, Furnishings, &c., for which the city dealers had anticipated demand, are not sought for. It is advanced by many that the cotton planters are not yet certain of their crops; that a rainy August has scared them, and that genuine, full blooded business will await the coming of frost and the passing of the national election.

From the cane region the Building Hardware demand is in the same quiescent state, although there is just now beginning the demand from the sugar houses and re-

fineries. The planters, however, are still watching all corners with the spirit of economy bred by many lean years.

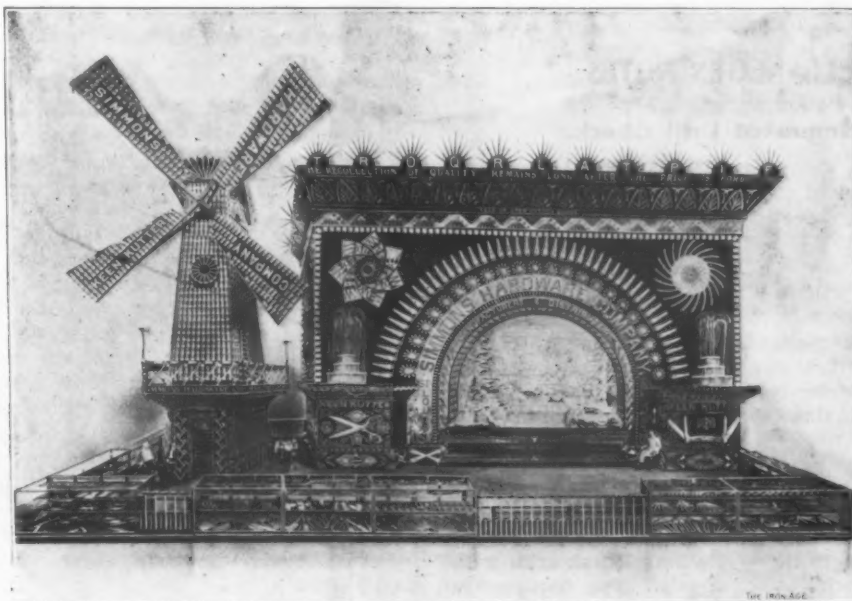
All this disgust is really relative, for the business of August, 1903, is being equalled. However, the trade down here has become used to steady progression, and anything that lags with the record of a previous year is not thought well of.

Mill supplies are to the cotton, the cane and the timber industries of the country what oil is to an engine. Without it the industries will cease to exist, and the amount sold is almost a certain criterion by which to judge the situation. In this the tradesmen find the greatest watchfulness necessary. Mill supplies are running something ahead of Household and Building Hardware, but not yet sufficiently ahead of the record of 1903 for the Hardwaremen to be satisfied. However, they find consolation in the fact that initial orders represent rather the spirit of the purchaser than his actual needs, and they trust that the caution evidenced by careful ordering may find a better prospect ahead than it apparently looks

ware or machinery of any kind. The large houses are earnestly endeavoring to obtain such traffic arrangements among the railroads in the city that export trade shall not be subjected to the tremendous toll for rehandling which is now charged.

SIMMONS HARDWARE COMPANY'S ST. LOUIS EXHIBIT.

HEREWITH we illustrate the splendid exhibit of the Simmons Hardware Company, St. Louis, at the Louisiana Purchase Exposition. This striking exhibit is located in the Manufactures Building, Block 10 A. and was designed and constructed by the employees of the company. The entire length of the display is 71 feet, the main arch being 50 feet long and 36 feet high. Everything in the display, except a small portion of the lettering, is composed of Hardware items, the goods being placed on a general background of black silk plush, relieved with yellow. The various designs, letters, scenery,



Simmons Hardware Company's St. Louis Exhibit.

for. The trade here is still very loath to believe that autumn business will not eventually surpass that of the fall of 1903.

IN NEW ORLEANS ITSELF

there are several local lines which have shown considerable healthy stimulation during the month. Building and Household Hardware have both improved to a remarkable degree, due almost entirely to the fact that the strikes have been practically settled and that many contracts are being let which it appeared would have to be held over until next summer. The influx of many foreigners from the North has increased the demand for household furnishing goods.

Ship chandlery is active, more so than for years, and the outlook is excellent. Woodward, Wight & Co., who do the largest ship chandlery business on the coast, are the leaders in an enterprise to establish a floating sectional dry dock which shall accommodate many vessels now compelled to go elsewhere for refitting. This will increase the permanent trade here to a considerable extent. There are a number of new ships entering the port; the South American and Central American traffic is increasing rapidly, and all the ship chandlery for these lines find lodgment in New Orleans.

There are several important transportation developments afoot, and the Hardware merchants here are working in unison to take advantage of the opportunities offered. The trade of the Panama Canal Commission is to be actively sought, despite the pronouncement of the purchasing agent for the commission to the effect that New Orleans could not compete with New York for Hard-

&c., were made out of different Hardware articles, as follows:

The name Simmons Hardware Company is composed of Royal Bronze Door Locks. The words St. Louis are composed of the company's Bulldog Padlocks. The arch below firm name is composed of Oak Leaf Pointing Trowels. The words Manufacturers and Distributors are composed of keyhole Escutcheons taken from Royal Locks. The next arch or scroll is composed of Keen Kutter silver plated Table Knives. The revolving discs are composed of an incandescent electric lamp in center. The arms are Royal Silver Spoons.

The upper right hand revolving wheel is composed of K. K. Scythes, K. K. Grass Hooks, K. K. Broom Korn Knives. The upper left hand revolving wheel is composed of E. C. Simmons Blue Brand Tape Lines, E. C. S. Blue Brand Nail Hammers, E. C. S. Blue Brand Nail Sets, E. C. S. Blue Brand Pruning Saws and Compass Saws, and E. C. S. Blue Brand Dividers. The fountains on either side, underneath revolving wheels, are composed of K. K. Car Bits. The spray from fountains is wire.

The large Keen Kutter Pocket Knife on left hand side weighs 225 pounds; length, opened, 11 feet; length of large blade, 36 inches. The blades open and shut automatically. Decorations and designs around K. K. Knife made out of stock K. K. Pocket Knives. The large Keen Kutter Shears on right hand side are 7 feet long, and open and shut automatically. Decorations, designs and words "Keen Kutter" above the large shears are made of stock K. K. Shears.

The log cabin is composed of E. C. S. Carpenters' Pen-

cils. Chain River is composed of German Coil Chain. The boat crossing Chain River is composed of two Keen Kutter Buck Saw Blades. The hunter and Indian in the boat wear miniature Royal Hunting Coats, Hats and Leggings.

The arch or top of waterfall is composed of German Coil Chain. The waterfalls proper are Auger Bits. The rising sun is composed of K. K. Corn Knives and K. K. Compass Saw Blades. The scenic work was done on galvanized iron.

The Wind Mill is 38 feet high and 12 feet wide at the base. The distance from floor to top of arm is 45 feet. The Wind Mill is composed entirely of Keen Kutter Axes—5000 being used—trimmed with K. K. Hatchets. The railing around Wind Mill is composed of K. K. Handled Axes, worked in rustic pattern. The posts are shingled with K. K. Axes, surmounted by K. K. Firemen's Handled Axes. The frieze under balcony of tower is composed of K. K. Handled Axes. The railing or fence around the exhibit is composed of Handled Sledges and Hammers.

In the construction of the company's display, which is one of the features of the Exposition, 12,407 pieces of Hardware were used.

MISCELLANEOUS NOTES.

Jacobs Improved Drill Chuck.

The Jacobs Mfg. Company, 274 Pearl street, Hartford, Conn., manufacturer of the Jacobs improved drill chuck, states that if no unexpected delay occurs the No. 1 drill chuck, capacity 0 to 13-64, will be ready for small shipments by about October 1. This means that a great many orders now on file will be filled in a short time, starting with the first order received, and filling all orders according to the date received. The Nos. 2 and 3 chucks are both on the market, and, although the factory is running full time, it is far behind its orders, having on file many orders for all three sizes, and filling same in small shipments.

The Hopkins & Allen Double Barrel Gun.

The Hopkins & Allen Arms Company, Norwich, Conn., is calling attention to its double barreled shotgun with Stubb's English twist steel barrels. The barrels are choke bored and the gun is provided with rebounding locks. The stock is the pistol grip pattern, finely checkered, with rubber butt plate, Prudy pattern, patent fore end and matted extension rib. The gun is made in 12 gauge, 30-inch barrels, and weighs $7\frac{1}{4}$ to 8 pounds.

Silver King Shovels and Spades.

The Beall Shovel Company, Alton, Ill., manufacturer of shovels, spades and scoops, is giving special attention to the quality and finishes of its line of solid socket Maynard pattern shovels and spades branded Silver King. It is the intention to push this line as one of especially high grade. The shovel blade and socket is made of best crucible steel, forged entirely from one piece of metal. They are made with both square and round points, with D and long handles. Under this brand the company is also making molders' shovels and post, drain and ditching spades. The goods referred to above are made in A, or first, grade only. The shovels and spades are made regularly in polished finish, but can be supplied in the black at a slight reduction in the list.

The Avery Stamping Company, Cleveland, Ohio, advises us that a brand of shovels labeled "Avery," and "Avery Shovel Company," and marketed by a well-known jobbing house, are not of its manufacture. It desires to call attention to the fact that the only shovels, spades and scoops which it makes are the Never-Break, made of 85 carbon genuine crucible steel; National, 70 carbon genuine crucible steel; National and Mohawk brands, and a special railroad shovel called "Knoxall." The company also makes Alaska steel snow shovels and Tropic ash or furnace shovels. Special attention is called to the coal shovels made by the company, which are re-

ferred to as exceptionally strong because the steel is turned back at the socket, making practically a double thickness.

Ventilating Window Lock.

The Safety Window Lock & Ventilator Company, 19 Quincy street, Chicago, Ill., is placing on the market a new type of burglar proof window catch, which permits the sash to be raised from the bottom or lowered from the top for desired ventilation without sacrificing security from entrance by burglars. This device, illustrated in Fig. 1, consists of a box containing a spring-actuated bolt, which is secured to the upper face of the lower sash, also a grooved metal slide or housing attached to the face of the upper sash. When the window is raised the nut at the end of the spring bolt automatically enters an opening at the bottom of the steel slide and the window is prevented from rising more than 6 inches by the length of the groove in the slide, as in Fig. 2. This space of 6 inches, while ample to give ventilation, is too small

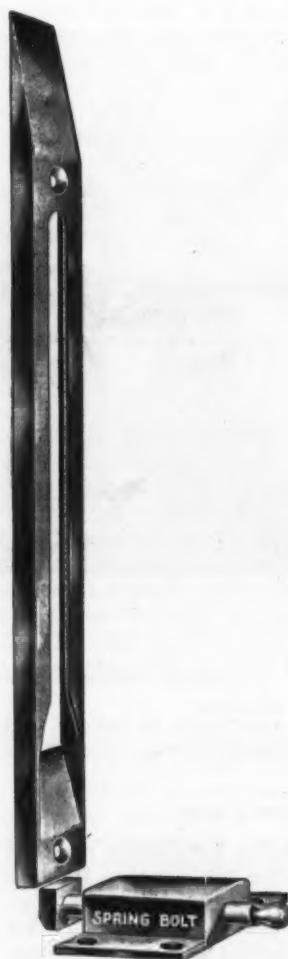


Fig. 1.—Ventilating Window Lock.

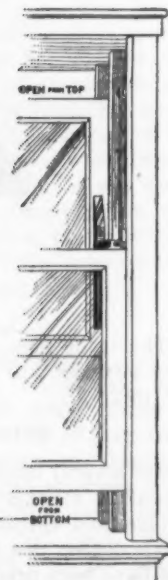


Fig. 2.—Application of Ventilating Lock.

to permit of the admission of even a small burglar. In the form of latch herewith illustrated manipulation from the outside is impossible, as the only position in which the spring bolt can be disengaged from its grooved socket is when the window is closed. Even should the glass be broken, it would be impossible for a person on the outside to reach in his hand and hold the spring bolt out of the grooved metal slide while raising the sash, for his arm would act as a wedge between the sashes to prevent the upward or downward movement of either. When it is desired by the occupants of the house to raise the sash to its full height all that is necessary is to pull out the spring bolt preventing the nut from entering the large opening at the bottom of the slide, and when opening is passed the nut slides easily against the outer surface of the groove. This device has been placed for sale in the hands of the Orr & Lockett Hardware Company and the Bullard & Gormley Company, Chicago, and other similar large hardware concerns in other cities.

Goodell New Butcher Knife.

The peculiar design of the blade of the butcher knife designed for household use, shown herewith, gives a long



Goodell New Butcher Knife.

cutting edge where most used, while the handle is made to fit the hand. The ornamental swage and, in fact, the whole appearance of the knife, it is remarked, will attract the attention of customers. The knife is being introduced by the Goodell Company, Antrim, N. H., and 10 Warren street, New York.

Automatic Center Punch.

Brown & Sharpe Mfg. Company, Providence, R. I., has just put on the market the automatic spring center punch here illustrated. It is finely made, and can be used to punch a small hole in any metal, such as is usually made with the ordinary center punch and hammer. The advantage of this tool is that no hammer is needed, as after the location of hole is determined a pressure of the hand causes the punch proper to recede into the interior



Automatic Center Punch, Two-thirds Size.

of handle nearly a half inch against the resistance of a stout spring until nearly the limit, when the spring pressure is automatically released and the handle plunges slightly forward, the impact imparting to the movable punch the effect of a light hammer blow, several thrusts in quick succession enlarging the dot, or hole, according to the necessities of the operation. The punch is $5\frac{1}{4}$ inches long over all, has a $\frac{5}{16}$ -inch diameter knurled handle, and the finely tempered steel point is 3-16 inch across at parallel portion. The punch is put up singly in a neat slide cover wood box.

The Perfect Fruit Picker.

In use, the fruit enters the picker through the side opening, as shown in the accompanying cut. The stem of the fruit naturally swings into the pick wires, after which a gentle pull disengages the fruit. The picker is



The Perfect Fruit Picker.

constructed so that it may be worked until filled, and then lowered to the ground without spilling. It is pointed out that there is an absence of projecting fingers which might become entangled in the tree branches, and no sharp ends of wire to come in contact with the ripe fruit. The picker is retinned wire and is $13\frac{1}{2}$ inches long over all. It is put on the market by the Wire Goods Company, Worcester, Mass.

Northern Team Bells.

The N. N. Hill Brass Company, East Hampton, Conn., is putting on the market a line of pure cast bell metal



Fig. 1.—Northern Team Bells.

nickel, and furnished with brass or leather loop. In Fig. 1 is shown the bell complete, with edge rounded, which

is guaranteed not to cut the horse. The method of casting the loop and tongue eye integral is illustrated in Fig.

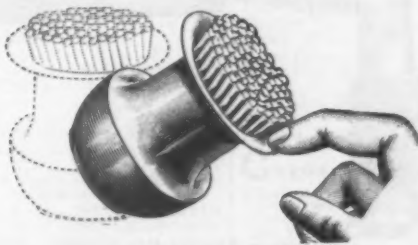


Fig. 2.—Loop and Tongue One Piece.

2, to prevent the tongue working loose. The bells belong to the Sterling line.

The Magic Holder.

Sidney Shepard & Co., Buffalo, N. Y., and 21 Cliff street, New York, are putting on the market the device herewith shown, for holding matches or toothpicks. It is



The Magic Holder.

made of polished aluminum and when knocked over quickly rights itself. The holders are about twice the size of the cut, packed one dozen in a cardboard box, with an attractive display card in each box.

Hockey Skate and Ankle Support.

Barney & Berry, Springfield, Mass.; New York office 114 Chambers street, manufacturers of ice skates, have made several additions to their large line of this class of goods, among which is a moderately priced detachable hockey skate and Model B ankle support. The hockey skate, E, Fig. 1, is all clamp and fastened to the shoe



Fig. 1.—Detachable Hockey Skate E.

by means of double threaded screw clamps at sides of sole and heel. The blades are of cast steel, polished, and the tops of cold rolled crucible steel. This style is regularly made in seven sizes by half inches, 9 to 12 inches, inclusive. Fig. 2 represents the Model B ankle support, which closely resembles their Model A, so long on the market, except that it is designed for use with the ordinary lever skate, such as their A, Z, American Club,

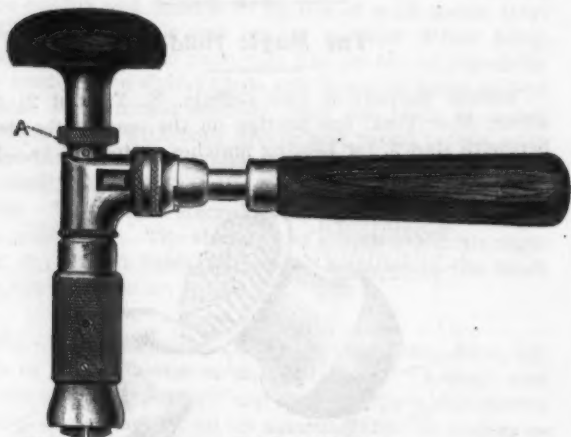


Fig. 2.—Model B Ice Skate Ankle Support.

Lock Lever, &c. In this style two small holes are to be drilled in the heel clamp and the support riveted securely to it by means of the rivets furnished with the support, thus adapting it to any skate of the character named. This support is made only in Grade 2, nickel plated.

Corner Ratchet Bit Brace.

John S. Fray & Co., Bridgeport, Conn., are offering their new corner ratchet bit brace, shown in the accom-



Corner Ratchet Bit Brace.

panying cut. It is designed for use in cramped positions where ordinary braces could not be used. The chuck is the same as used on the firm's No. 106 line of braces. Between the head and the ratchet frame is a knurled collar, designated by the letter A in the cut, the purpose of which is to assist in starting a bit or tool previous to

its entering wood or other material sufficiently so that the friction will hold it from turning while the handle is being pushed back to take a fresh hold on the ratchet. The finger and thumb of the operator's hand which supports the head, bearing slightly on this collar, is sufficient to hold the chuck, preventing its turning except as driven by the ratchet. The braces are packed two in a box.

Eureka Hydrant Chains.

Onelda Community, Kenwood, N. Y., and 395 Broadway, New York, are manufacturing the hydrant chains shown



Fig. 1.—Eureka Hydrant Chains.

herewith. The stock carried by the company comprises various sizes to correspond with the different makes of hydrants, and each is fitted with the company's new S-



Fig. 2.—Application of Hydrant Chains.

hook attachments. The hook acts as a swivel on the hydrant cap, and is easily attached.

Bull Dog Screw Driver.

Braunsdorf-Mueller Company, Elizabeth, N. J., are placing on the market the screw driver here illustrated, for the use of machinists, automobilists, &c. The tools have nicely polished hard wood grooved handles and are made of crucible tool steel, carefully hardened and tem-



Bull Dog Screw Driver.

pered. The points are finished ready for use. Each one is tested and warranted perfect. They are made with round blades in 2, 3 and 4 inch size, and with square blades 2, 3 and 4½ inches. A wrench can be clamped on the square blades, giving extra purchase or leverage. The manufacturers remark that the tool will fill the demand for a driver that will start rusted screws without twisting or snapping.

Current Hardware Prices.

REVISED AUGUST 30, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies that the

price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also *The Iron Age Directory*, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a *Directory* of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Alumite in Carloads: $\text{per ton } \$90 @ 100$
Crystal. $\text{per ton } \$120 @ 110$
Grain. $\text{per ton } \$120 @ 110$
See also *Emery*.

Adjusters, Blind—

Domestic, $\text{per doz. } \$3.00$ 33 1/2
North's..... 10%
Zimmerman's—See *Fasteners, Blind*.

Window Stop—

Ives' Patent..... 35%
Tapite's Perfection..... 35%

Ammunition—See Caps, Cartridges, Shells, etc.

Anvils—American—

Eagle Anvils..... $\text{per lb. } 7 1/4 @ 7 1/2$
Hay-Budden, Wrought..... $\text{per lb. } 9 1/4$
Horsehoe brand, Wrought..... $\text{per lb. } 9 1/4$
Trenton..... $\text{per lb. } 9 @ 9 1/4$

Imported—

Peter Wright & Sons..... $\text{per lb. } 10 1/2 @ 11$

Anvil, Vise and Drill—

Millers Falls Co., $\$18.00$ 75 & 10%
See also *Parers*.

Apple Parers—See Parers, Apple, etc.

Aprons, Blacksmiths'—

Hull Bros. Co..... $\text{per doz. } \$3.50$
Livingston Nail Co..... $\text{per doz. } \$3.50$

Augers and Bits—

Com. Double Spur..... 75 @ 75 & 5%
Boring Machine Augers..... 60 @ 70%
Car Bits, 12-in. twist..... 60 @ 10 & 2%
Jennings' Pattern..... 50 @ 10 & 5%
Ford's Auger and Car Bits..... 40 & 5%
Foster Pat. Auger Bits..... 35%
C. E. Jennings & Co.:
No. 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1044, 1046, 1048, 1050, 1052, 1054, 1056, 1058, 1060, 1062, 1064, 1066, 1068, 1070, 1072, 1074, 1076, 1078, 1080, 1082, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1118, 1120, 1122, 1124, 1126, 1128, 1130, 1132, 1134, 1136, 1138, 1140, 1142, 1144, 1146, 1148, 1150, 1152, 1154, 1156, 1158, 1160, 1162, 1164, 1166, 1168, 1170, 1172, 1174, 1176, 1178, 1180, 1182, 1184, 1186, 1188, 1190, 1192, 1194, 1196, 1198, 1200, 1202, 1204, 1206, 1208, 1210, 1212, 1214, 1216, 1218, 1220, 1222, 1224, 1226, 1228, 1230, 1232, 1234, 1236, 1238, 1240, 1242, 1244, 1246, 1248, 1250, 1252, 1254, 1256, 1258, 1260, 1262, 1264, 1266, 1268, 1270, 1272, 1274, 1276, 1278, 1280, 1282, 1284, 1286, 1288, 1290, 1292, 1294, 1296, 1298, 1300, 1302, 1304, 1306, 1308, 1310, 1312, 1314, 1316, 1318, 1320, 1322, 1324, 1326, 1328, 1330, 1332, 1334, 1336, 1338, 1340, 1342, 1344, 1346, 1348, 1350, 1352, 1354, 1356, 1358, 1360, 1362, 1364, 1366, 1368, 1370, 1372, 1374, 1376, 1378, 1380, 1382, 1384, 1386, 1388, 1390, 1392, 1394, 1396, 1398, 1400, 1402, 1404, 1406, 1408, 1410, 1412, 1414, 1416, 1418, 1420, 1422, 1424, 1426, 1428, 1430, 1432, 1434, 1436, 1438, 1440, 1442, 1444, 1446, 1448, 1450, 1452, 1454, 1456, 1458, 1460, 1462, 1464, 1466, 1468, 1470, 1472, 1474, 1476, 1478, 1480, 1482, 1484, 1486, 1488, 1490, 1492, 1494, 1496, 1498, 1500, 1502, 1504, 1506, 1508, 1510, 1512, 1514, 1516, 1518, 1520, 1522, 1524, 1526, 1528, 1530, 1532, 1534, 1536, 1538, 1540, 1542, 1544, 1546, 1548, 1550, 1552, 1554, 1556, 1558, 1560, 1562, 1564, 1566, 1568, 1570, 1572, 1574, 1576, 1578, 1580, 1582, 1584, 1586, 1588, 1590, 1592, 1594, 1596, 1598, 1600, 1602, 1604, 1606, 1608, 1610, 1612, 1614, 1616, 1618, 1620, 1622, 1624, 1626, 1628, 1630, 1632, 1634, 1636, 1638, 1640, 1642, 1644, 1646, 1648, 1650, 1652, 1654, 1656, 1658, 1660, 1662, 1664, 1666, 1668, 1670, 1672, 1674, 1676, 1678, 1680, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1706, 1708, 1710, 1712, 1714, 1716, 1718, 1720, 1722, 1724, 1726, 1728, 1730, 1732, 1734, 1736, 1738, 1740, 1742, 1744, 1746, 1748, 1750, 1752, 1754, 1756, 1758, 1760, 1762, 1764, 1766, 1768, 1770, 1772, 1774, 1776, 1778, 1780, 1782, 1784, 1786, 1788, 1790, 1792, 1794, 1796, 1798, 1800, 1802, 1804, 1806, 1808, 1810, 1812, 1814, 1816, 1818, 1820, 1822, 1824, 1826, 1828, 1830, 1832, 1834, 1836, 1838, 1840, 1842, 1844, 1846, 1848, 1850, 1852, 1854, 1856, 1858, 1860, 1862, 1864, 1866, 1868, 1870, 1872, 1874, 1876, 1878, 1880, 1882, 1884, 1886, 1888, 1890, 1892, 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1912, 1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1944, 1946, 1948, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 2810, 2812, 2814, 2816, 2818, 2820, 2822, 2824, 2826, 2828, 2830, 2832, 2834, 2836, 2838, 2840, 2842, 2844, 2846, 2848, 2850, 2852, 2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290, 3292, 3294, 3296, 3298, 3300, 3302, 3304, 3306, 3308, 3310, 3312, 3314, 3316, 3318, 3320, 3322, 3324, 3326, 3328, 3330, 3332, 3334, 3336, 3338, 3340, 3342, 3344, 3346, 3348, 3350, 3352, 3354, 3356, 3358, 3360, 3362, 3364, 3366, 3368, 3370, 3372, 3374, 3376, 3378, 3380, 3382, 3384, 3386, 3388, 3390, 3392, 3394, 3396, 3398, 3400, 3402, 3404, 3406, 3408, 3410, 3412, 3414, 3416, 3418, 3420, 3422, 3424, 3426, 3428, 3430, 3432, 3434, 3436, 3438, 3440, 3442, 3444, 3446, 3448, 3450, 3452, 3454, 3456, 3458, 3460, 3462, 3464, 3466, 3468, 3470, 3472, 3474, 3476, 3478, 3480, 3482, 3484, 3486, 3488, 3490, 3492, 3494, 3496, 3498, 3500, 3502, 3504, 3506, 3508, 3510, 3512, 3514, 3516, 3518, 3520, 3522, 3524, 3526, 3528, 3530, 3532, 3534, 3536, 3538, 3540, 3542, 3544, 3546, 3548, 3550, 3552, 3554, 3556, 3558, 3560, 3562, 3564, 3566, 3568, 3570, 3572, 3574, 3576, 3578, 3580, 3582, 3584, 3586, 3588, 3590, 3592, 3594, 3596, 3598, 3600, 3602, 3604, 3606, 3608, 3610, 3612, 3614, 3616, 3618, 3620, 3622, 3624, 3626, 3628, 3630, 3632, 3634

Forks—

Base Discounts Aug. 1, 1899, list:

Hay, 3 tine.....	50¢10¢55
Boys' & Fish, 2 tine.....	50¢10¢55
Hay & Boys', 3 tine.....	60¢55
Hay & Boys', 4 tine.....	60¢55
Champion Hay.....	60¢55
Hay & Header, long 3 tine.....	65¢
Header, 4 tine.....	65¢
Barley, 4 & 5 tine, Steel.....	60¢20¢
Manure, 4 tine.....	60¢15¢10¢
Manure, 5 & 6 tine.....	60¢15¢10¢
Spading.....	70¢25¢
Potato Digger, 6 tine.....	60¢10¢
Sugar Beet.....	60¢10¢
Coke & Coal.....	40¢10¢
H-day Mill & Street.....	65¢
Iowa Dig-Hay Potato.....	60¢10¢
Victor, Hay.....	60¢15¢10¢
Victor, Manure.....	60¢55
Victor, Header.....	65¢
Champion, Hay.....	60¢55
Champion Header.....	65¢
Champion, Manure.....	60¢15¢10¢
Columbia, Hay.....	60¢25¢
Columbia, Manure.....	70¢
Columbia, Spading.....	70¢15¢
Hawkeye Wood Barley.....	40¢
W. & C. Potato Digger.....	60¢10¢
Acme Hay.....	60¢20¢
Acme Manure, 4 tine.....	60¢10¢55
Dakota Header.....	60¢25¢
Jackson Steel Barley.....	60¢25¢
Kansas Header.....	65¢
W. & C. Favorite Wood Barley.....	40¢

Plated—See Spoons.

Frames—Saw—

White, Straight Bar, per doz.	75¢90¢
Red, Straight Bar, per doz.	\$1.00\$1.25
Red, Double Brace, per doz.	\$1.50\$1.50

Freezers Ice Cream—

Each.....	\$1.25 \$1.60 \$1.90 \$2.20 \$2.50
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Fruit and Jelly Presses—

See Frames, Fruit and Jelly.	
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Fry Pans—See Pans, Fry.**Fuse—**

Hemp.....	\$3.75
Cotton.....	3.30
Waterproof Single Taped.....	3.65
Waterproof Double Taped.....	4.40
Waterproof Triple Taped.....	5.15

Gates Molasses and Oil—

St. Johns' Pattern.....	80¢10¢10¢10¢55
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Gauges—

Marking, Mortise, etc.....	50¢10¢50¢10¢10¢55
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Chapin-Stephens Co.

Marking, Mortise, etc.....	50¢10¢50¢10¢10¢55
Scholl's Patent.....	50¢10¢50¢10¢10¢55
Door Hangers.....	50¢50¢10¢
Staley & L. Co.'s Butt & Babst Gauge.....	90¢20¢10¢10¢
Wire, Brown & Sharpe's.....	95¢
Wire, Morse's.....	95¢
Wire P. S. & W. Co.....	30¢10¢

Climets—Single Cut—

Nail, Metal, Assorted, gro.	\$1.50\$1.50
Spike, Metal, Assorted, gro.	\$2.30\$2.50
Nail, Wood Handled, Assorted, gro.	\$1.75\$2.00
Spike, Wood Handled, Assorted, gro.	\$1.25\$1.50

Glass, American Window

See Trade Report	
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Glasses, Level—

Chapin-Stephens Co.....	60¢60¢10¢10¢
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Glue—Liquid Fish—

Bottles or Cans, with Brush.....	25¢50¢
Cans (½ pts., pts., qts., ½ gal., gal.).....	25¢45¢
International Glue Co. (Martin's).....	45¢10¢

Grease Axle—

Common Grade.....	gro. \$1.50\$2.50
Dixon's Everlasting, 10-m. palls, etc.	85¢
Dixon's Everlasting, 10-bx., per doz.	\$1.20; 2-bx. \$2.00

Grips, Nipple—

Perfect Nipple Grips.....	40¢10¢25¢
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Griddles, Soapstone—

Pike Mfg. Co.....	33¢33¢10¢
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Grindstones—

Bicycle Emery Grindstone.....	65.50
Bicycle Grindstones, each.....	\$2.50\$3.00
Pike Mfg. Co. Improved Family Grindstones, per inch, per doz.....	\$3.00 (33¢)
Pike Mfg. Co. Improved Family Grindstones, per inch, per doz.....	\$3.00 (33¢)
Grinder, each.....	\$4.00
Velox Ball Bearing, mounted, Anglo Iron Frames.....	each, \$2.25

Halters and Ties—

Covert Mfg. Co. Web.....	40¢25¢
Jute Rope.....	40¢55¢
Sisal Rope.....	30¢
Cotton Rope.....	45¢25¢
Hemp Rope.....	45¢25¢

Covert's Saddlery Works—

Web and Leather Halters.....	20¢
Jute and Manila Rope Halters.....	70¢
Sisal Rope Halters.....	60¢45¢
Jute, Manila and Cotton Rope Ties.....	70¢
Sisal Rope Ties.....	60¢10¢

Hammers—

Handled Hammers—	
Heller's Machinists'.....	40¢10¢40¢10¢10¢
Heller's Farriers'.....	40¢10¢40¢10¢10¢
Magnetic Tack, No. 1, 2, 3, \$1.25, \$1.50, \$1.75.....	40¢40¢10¢10¢
Peck, Stow & Wilcox.....	40¢10¢10¢
Fayette R. Plumb.....	30¢10¢10¢
Plumb, A. R. and B. S. Hand Engineers'.....	50¢75¢50¢10¢75¢55¢
Machinists' Hammers.....	50¢50¢10¢10¢55¢
Riveting and Tinner's.....	40¢25¢40¢10¢25¢
Sargent's C. & New List.....	40¢

Heavy Hammers and Sledges—

Under 3 lb.....	lb 5¢10¢10¢10¢
3 to 5 lb.....	lb 8¢10¢
Over 5 lb.....	lb 8¢10¢
Wilkinson's Smith's.....	95¢10¢10¢

Handles—**Agricultural Tool Handles—**

Axe, Pick, etc.....	45¢50¢55¢
Hoe, Rake, etc.....	45¢50¢55¢
Fork, Shovel, Spade, etc.....	45¢50¢55¢
Long Handles.....	45¢50¢55¢
D Handles.....	40¢

Cross-Cut Saw Handle—

Atkins.....	40¢55¢
Champion.....	45¢45¢10¢
Diamond.....	50¢

Mechanics' Tool Handle—

Auger, assorted.....	gro. \$2.50\$2.85
Bradawl.....	gro. \$1.65\$1.85

Chisel Handles:

Apple Tanged Firmer, gro. ass'd.....	\$1.40\$2.55
Hickory Tanged Firmer, gro. ass'd.....	\$1.15\$2.40
Apple Socket Firmer, gro. ass'd.....	\$1.75\$1.95
Hickory Socket Firmer, gro. ass'd.....	\$1.45\$1.60
Hickory Socket Framing, gro. ass'd.....	\$1.60\$1.75

File, assorted.....	gro. \$1.50\$1.60
Hammer, Hatchet, Axe, etc.....	50¢
Hand Saw, Varnished, doz.....	80¢35¢
Not Varnished.....	65¢75¢

Plane Handles:

Jack, doz. 30¢; Jack Battered.....	75¢
Fore, doz.....	45¢; Fore, Bolted 90¢

Chapin-Stephens Co.

Carving Tool.....	40¢40¢10¢
Chisel.....	65¢65¢10¢
File and A. W. No. 1 and 2.....	40¢
Saw and Plane.....	40¢40¢10¢
Screw Driver.....	40¢40¢10¢
Millers Falls Adj. and Ratchet Auger Handles.....	15¢10¢
Nicholson Simplicity File Handle, per gro.....	80.95\$1.50

Hangers—

NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, etc.	
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Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3 4 5 6 8
Single Doz.....	\$0.90 1.25 1.60 1.95 2.50

Barn Door, New English Pattern, Check Back, Regular:

Inch.....	3 4 5 6
Single Doz.....	\$1.30 1.85 2.50 3.00

Allith Mfg. Co.

Reliable No. 1.....	per. doz. \$3.00
Reliable No. 2.....	per. doz. \$9.60

Chicago Spring Butt Co.

Friction.....	95¢
Oilrolling.....	95¢
Big Twin.....	95¢

Chisholm & Moore Mfg. Co.

Baggage Car Door.....	50¢
Elevator.....	30¢
Railroad.....	50¢

Crout & Carrier Mfg. Co.

Roller Axle.....	60¢10¢55¢
Roller Bearing.....	70¢25¢

Grimm Mfg. Co.

Solid Axle, No. 10.....	\$12.00
Roller Bearing, No. 11.....	\$15.00
Roller Bearing, Ex. 117, No. 22.....	\$13.00
Hinged Hangers.....	\$16.00

Lane Bros. Co.

Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 105.....	\$2.85
Parlor, New Model.....	\$3.50
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢10¢55¢
Hinged.....	net \$4.40
Covered.....	60¢10¢
Special.....	70¢25¢

Lawrence Bros.

Advance.....	80¢10¢
Cleveland.....	70¢10¢
C. Uper, No. 75.....	40¢
Crowder.....	60¢10¢
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25.....	80¢55¢
Giant.....	70¢55¢
Hummer.....	70¢55¢
New York.....	80¢10¢
Peck.....	70¢55¢
Sterling.....	80¢10¢

McKinney Mfg. Co.

No. 1, Special.....	\$15
No. 2, Standard.....	\$18
Hinged Hangers.....	\$16
Meyers' Stays Hangers.....	80¢

Richards Mfg. Co.

Pioneer Wood Track No. 3.....	\$2.15
Ball R'r'g Steel Track No. 10.....	\$2.40
Roller R'r'g Steel Track No. 12.....	\$2.30
Bull R'r'g Steel Track No. 13.....	\$2.40
Roller R'r'g Steel Track No. 14.....	\$2.30
Hero Adjustable Track No. 19.....	50¢
Adjustable Track Tandem Trolley Track No. 16.....	50¢
Seal, Steel Track No. 8.....	\$2.40
Auto Adjustable Track No. 22.....	\$4.15
Trolley B. D. No. 17.....	\$1.40
Trolley F. D. No. 120.....	\$2.35
Trolley F. D. No. 121.....	\$2.45
Trolley F. D. No. 151.....	\$2.60
Safety Underwriters F. D. No. 1012.....	25¢
Tandem No. 44.....	70¢55¢
Trolley F. D. No. 151.....	\$2.60
Palace, Adjustable Track No. 13.....	60¢10¢
Royal, Adjustable Track No. 12.....	60¢10¢

Ives' Wood Track No. 1.....

Trolley B. D. No. 20.....	\$1.35
Trolley B. D. No. 24.....	\$1.45
Trolley B. D. No. 27.....	\$1.55
Trolley B. D. No. 28.....	\$1.65
Roller Bearings Nos. 32, 40, 41, 42.....	70¢55¢
Anti-friction No. 42.....	60¢10¢
Hinged Tandem No. 43.....	80¢
Folding Door B. B. Swivel No. 125.....	30¢

Safety Door Hanger Co.

Storm King Sledge.....	60¢
U. S. Standard sledge.....	60¢
Stowell Mfg. and Foundry Co. Acme Parlor Ball Bearing.....	40¢
Alax Hinge Door.....	80¢
Apex Parlor Door.....	50¢10¢55¢

Atlas.....

Baggage Car Door.....	60¢
Climax Anti-Friction.....	50¢10¢
Elevator.....	50¢
Express.....	40¢
Freight Car Door.....	65¢
Interstate.....	10¢10¢
Lundy Parlor Door.....	50¢10¢
Matchless.....	60¢10¢
Naesen.....	70¢10¢
Par or Door.....	50¢10¢
Railroad.....	50¢10¢
Rex Hinge Door.....	60¢
Street Car Door.....	50¢
Steel, Nos. 300, 404, 500.....	50¢10¢
Underwriters' Fire Door.....	40¢
Wild West Warehouse Door.....	50¢
Zenith for Wood Track.....	50¢10¢

A. L. Swett Iron Works:

Check Back.....	70¢
Climax Anti-Friction.....	50¢10¢
Eagle.....	70¢
Hinge.....	60¢
New Fence.....	60¢
Pilot.....	60¢
Pilot Hinge.....	60¢
Rider Woooster.....	65¢
Western Pattern.....	70¢

Taylor & Boggs Fly Co.'s Kidder's

Underwear's Fire Door.....	50¢15¢10¢55¢
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Wilcox Mfg. Co.

Bike Roller Bearing.....	60¢10¢
C. J. Roller Bearing.....	60¢10¢
Cycle Ball Bearing.....	50¢
Dwarf Ball Bearing.....	40¢
Ives, Wood Track.....	60¢10¢
L. T. Roller Bearing.....	60¢10¢55¢
New Era Roller Bearing.....	50¢10¢
O. K. Roller Bearing.....	60¢10¢55¢
Prindle, Wood Track.....	60¢
Richards' Wood Track.....	60¢
Richards' Steel Track.....	50¢10¢
Spencer Roller Bearing.....	60¢10¢
Tandem No. 1 and 2.....	60¢
Underwriters' Roller Bearing.....	60¢
Velvet.....	50¢
Wilcox Auditorium Ball bearing.....	20¢
Wilcox Barn Trolley No. 123.....	15¢
Wilcox Elev. Door, Nos. 11 and 12.....	50¢
Wilcox Elev. Door, No. 12.....	60¢
Wilcox Fire Trolley, Roller Bearing.....	30¢
Wilcox Ho Boy Noiseless Ball Bearing.....	40¢
Wilcox New Century.....	50¢10¢10¢
Wilcox O. K. Steel Track.....	50¢
Wilcox O. K. Trolley.....	50¢
Wilcox Trolley Ball Bearing.....	40¢
Wilcox Wideman Narrow Gauge Ball Bearing.....	40¢

For Track, see Rail**Hangers, Garment—**

Pullman Trouser, No. 1, per gro.....	\$9.00
Pullman Trouser, No. 4, per gro.....	\$24.00
Victor Folding.....	\$9.60
Western, W. G. Co.....	70¢10¢

Myers' Patent Gate Hangers, per doz. net 4.50**Hasps—**

McKinney's Perfect Hasp, per doz.....	50¢
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Hatchets—

Regular list.....	25¢10¢35¢55¢
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Heaters Carriage—

Clark, No. 5, \$1.75; No. 3H, \$2.00; No. 3, 25¢; No. 3D, \$2.75; No. 7D, \$3.00; No. 3E, \$1.25; No. 1, \$3.50.....	15¢
Clark Coal, \$0.75 per doz.....	10¢

Hinges—

Blind and Shutter Hinges—	
Surface Gravity Locking Blind—	
(Victor; National; 1898 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo).....	
No.....	1 3 5
Doz. pair.....	\$0.35 1.75 3.50

Mortise Shutter—

(L. & P. O. S. Dixie, etc.).....	
No.....	1 1 1/2 2 2 1/2
Doz. pair.....	\$0.70 .65 .60 .55

Mortise Reversible Shutter, (Buffalo, etc.)

No.....	1 1 1/2 2
Doz. pair.....	\$0.75 .70 .65

North's Automatic Blind Fixtures, No. 3, for Wood, \$9.00; No. 3, for Brick, \$11.50.....

Parker.....	70¢75¢
Reading's Gravity.....	40¢
Sargent's, Nos. 1, 3, 5, 11 & 13.....	70¢
Stanley's Steel Gravity Blind Hinges with screws, \$1.40.....	

Wrightsville Hardware Co.

O. S. Lull & Porter.....	75¢55¢
Acme, Lull & Porter.....	75¢

Wire Goods Co.	60¢10¢
Acme	70¢
Chief	70¢10¢
Crown	70¢10¢
Czar	60¢
V. Brace	60¢10¢
Czar Harness	60¢10¢

Wrought Iron—	
Box, 6 in., per doz, \$1.00; 8 in., \$1.25; 10 in., \$2.50.	
Cotton, doz, \$1.05@1.25	
Wrought Staples, Hooks, &c.	

Miscellaneous—	
Hooks, Bench, See Stops, Bench.	
Bush, Light, doz, \$5.50; Medium, \$6.00; Heavy, \$6.50	

Best—Nos. 1 2 3 4	
Common, \$1.30 1.50 1.60 1.60	
Potato and Manure, doz, \$6.00@15¢	
Wh. flint, doz, \$6.00@15¢	
Hooks and Eyes, doz, \$6.00@15¢	

Brass—	
Malleable Iron, 70¢10¢@70¢10¢	
Covert Mfg. Co. Gate and Scuttle Hooks, doz, \$5.50; Medium, \$6.00; Heavy, \$6.50	
Covert Saddle Works' Self Looking Gate and Door Hook, doz, \$5.50	
Fl. Madison Cut-Edge Corn Hooks, doz, \$5.50	

Bench Hooks—See Bench Stops.	
Corn Hooks—See Knives, Corn.	

Horse Nails—See Nails, Horse	
Horse Shoes—	
See Shoes, Horse.	

Hose Rubber—	
Garden Hose, 3/4 in., ft. 4 5 6 7 8 9 10	

Competition, ft. 4 5 6 7 8 9 10	
3-ply Standard, ft. 4 5 6 7 8 9 10	
4-ply Standard, ft. 4 5 6 7 8 9 10	
5-ply extra, ft. 4 5 6 7 8 9 10	
6-ply extra, ft. 4 5 6 7 8 9 10	
Cotton Garden, 3/4 in., coupled, ft. 4 5 6 7 8 9 10	
Low Grade, ft. 4 5 6 7 8 9 10	
Fair quality, ft. 4 5 6 7 8 9 10	

Irons—Sad—	
From 4 to 10, lb. 2 3 4 5 6 7 8 9 10	

B. B. Sad Irons, lb. 2 3 4 5 6 7 8 9 10	
Chinese Laundry, lb. 2 3 4 5 6 7 8 9 10	
Chinese Sad, lb. 2 3 4 5 6 7 8 9 10	

Mrs. Potts, cents per set:	
Nos. 50 55 60 65	
JapdTop 62 69 72 69	
TintTop 65 62 75 72	
New England Pressing, lb. 3 4 5 6 7 8 9 10	

Pinking Irons, doz, \$5.00@6.00	
Soldering—	
Soldering Coppers 2 1/2 and 3, 19¢20¢	
1 1/2 and 2, 21¢22¢	

Jacks Wagon—	
Covert Mfg. Co.:	
Auto Screw, 30¢45¢	
Steel, 45¢55¢	

Covert's Saddle Works':	
Daisy, 60¢10¢	
Victor, 60¢	
Lockport, 50¢	
Lane's Steel, 30¢10¢	
Richards' Tiger Steel, No. 130, 40¢	

Kettles—	
Brass, Spun, Plain, 20¢25¢	
Enamelled and Cast Iron—See Ware, Hollow.	

Knives—	
Butcher, Kitchen, &c.—	
Foster Bros., Butcher, &c., 30¢	
Smith & Hemenway Co., 40¢10¢	
Wilkinson Shear & Cutlery Co., 50¢	
Hay and Straw—See Hay Knives.	

Corn—	
Withington Acme, per doz, \$2.65; Dent, \$2.75; Adj. Serrated, \$2.80; Serrated, \$2.90; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.	

Drawing—	
Standard List, 70¢10¢@70¢10¢10¢	
C. E. Jennings & Co. Nos. 45, 46, 60	
Jennings & Griffin, Nos. 41, 42, 60	
Ohio Tool Co., 70¢	
Swan's, 70¢10¢25¢	
Watrous, 10¢5	
L. & J. White, 30¢45¢55¢	

Hay and Straw—	
Iwan's Sickle Edge, per doz, \$9.50	
Iwan's Serrated, per doz, \$10.00	

Mining—	
Buffalo, per gro, \$13.00	

Miscellaneous—	
Furriers', doz, \$3.00@3.55	
Wessenholtz's, per doz, \$3.00@3.55	

Knobs—	
Base, 1 1/4 in., Birch, or Maple, Rubber tip, gro, \$1.00@1.15	
Carriage, Jap, all sizes, gro, \$0.45@0.50	
Door, Mineral, doz, \$0.65@0.70	
Door, For, Jap d, doz, \$0.70@0.75	
Door, For, Nickel, doz, \$0.75@0.80	
Bardley's Wood Door, Shutter, No. 155, Picture, Sargent's, 60¢10¢10¢	

Lacing Leather—	
See Belting, Leather.	

Ladders, Store Etc.—	
Lane's Store, 95¢	
Myers Noiseless Store Ladders, 30¢	
Richards Mfg. Co., Improved Noiseless, No. 112, 40¢	
Climax Shif, No. 113, 40¢	
Trolley, No. 108, 40¢	

Ladies' Making—	
L. & J. White Co., Low List, 25¢	
P. S. & W., 40¢	
Reading, 60¢	
Sargent's, 50¢10¢	

Lanterns—Tubular—	
Regular Tubular No. 9, doz, \$1.35@1.75	
Lift Tubular, No. 0, doz, \$1.75@2.25	
Hinge Tubular, No. 0, doz, \$1.75@2.25	
Other Styles, 10¢10¢10¢10¢	

Bull's Eye Police—	
No. 1 2 3 4, 35¢50¢75¢	
No. 2, 5 inch, 75¢	

Lasts and Stands Shoe—	
Stowell's Atlas, Malleable Iron, 50¢	
Stowe's Badger, Cast Iron, 50¢	

Latches—Thumb—	
Roggin's Latches, with screw, doz, \$5.00	
Richards' Bull Dog, Heavy, No. 125, 40¢	

Door—	
Richards' Bull Dog, Heavy, No. 125, 40¢	

Leaders Cattle—	
Small, doz, 55¢; large, 60¢	
Covert Mfg. Co., 35¢	

Lifters, Transom—	
R. & E., 33¢45¢	

Lines—	
Wire Clothes, Nos. 18 19 20	
100 feet, \$2.20 2.00 1.65	
75 feet, \$1.80 1.70 1.30	

Ladders, Store Etc.-	
Lane's Store.....	95%
Myers Noiseless Store Ladders.....	90%

Stanley's Duplex..... 90@90&10&10%
Wood's Extension..... 33&40

Poachers, Egg—

Buffalo Steam Egg Poachers, # doz.
No. 1, \$1.00; No. 2, \$0.90; No. 3,
\$0.80; No. 4, \$1.20..... 50%

Points, Glaziers—

Bulk and 1 lb. papers..... lb. 8 3/4c
1/2 lb. papers..... lb. 9 1/4c
1/4 lb. papers..... lb. 9 1/4c

Pokes, Animal—

Madison Hawks..... # doz. \$3.25
Madison Western..... # doz. \$4.00

Police Goods—

Manufacturers' Lists..... 25@25&25%
Towers..... 25%

Polish—Metal—

Prentiss Liquid, No. 1 (1/2 pt.), # doz.
\$3.00; No. 2 (1 qt.), \$2.75..... 40%

Prentiss Paste..... 40&10%

George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes,
doz. 50¢; # gr. \$1.50; 1/2 lb. boxes,
doz. \$1.25; 1 lb. boxes, # doz. \$1.25;
U. S. Liquid, 8 oz. cans, # doz. \$1.25;
gr. \$1.20.

Barkkeepers' Friend Metal Polish, # doz.
\$1.75; # gr. \$18.00.

Wynn's White Silk, 1/2 pt. cans, # doz.
..... 2.00

Stove—

Black Eagle Benzine Paste, 5 lb. cans..... 10%

Black Eagle, Liquid, 1/2 pt. cans, # doz. 75¢

Black Kild Paste, 1/2 lb. cans, # doz. \$0.90

Black Kid Paste, 1/2 lb. cans, # doz. \$0.65

Ladd's Black Beauty, # gr. \$10.00..... 50%

Joseph Dixon's, # gr. \$5.75..... 10%

Dixon's Plumbago..... # gr. \$2.50

Fireside..... # gr. \$1.50..... 10%

Japanese..... # gr. \$3.50

Jet Black..... # gr. \$3.50

Peerless Iron Enamel, 10 oz. cans..... # doz. \$1.50

Wynn's:
Black Silk, 5 lb. pail..... each 70¢

Black Silk, 1/2 lb. box..... # doz. \$1.00

Black Silk, 5 oz. box..... # doz. \$0.75

Black Silk, 1/2 pt. liq..... # doz. \$1.00

Poppers, Corn—

1 qt., Square..... gro. \$9.00

1 qt., Round..... gro. \$10.00

1 1/2 qt., Square..... gro. \$11.00

2 qt., Square..... gro. \$13.00

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 4 1/2"; 6
ft., 4 1/2"; 6 ft., 4 1/2"..... \$1.80

Steel Hitching Posts, each..... \$1.80

Potato Parers—

See Parers, Potato.

Pots—Glue—

Enamelled..... 50%

Timed..... 35%

Powder—

In Canisters:
Duck, 1 lb. each..... 45¢

Fine Sporting, 1 lb. each..... 75¢

Rifle, 1/2 lb. each..... 15¢

Rifle, 1 lb. each..... 25¢

King's Semi-Smokeless:
Keg (25 lb. bulk)..... \$4.50

Half Keg (12 1/2 lb. bulk)..... \$3.50

Quarter Keg (6 1/4 lb. bulk)..... \$1.90

Case 34 (1 lb. cans bulk)..... \$3.50

Half case (1 lb. cans bulk)..... \$4.50

King's Smokeless: Shot Gun Rifle
Keg (25 lb. bulk)..... \$12.00 \$15.00

Half Keg (12 1/2 lb. bulk)..... 6.25 7.75

Quarter Keg (6 1/4 lb. bulk)..... 3.25 4.00

Case 34 (1 lb. cans bulk)..... 14.00 17.00

Half case 12 (1 lb. cans bulk)..... \$4.75

Robin Hood Smokeless Shot Gun..... 50&30%

Presses—

Fruit and Jelly—
Enterprise Mfg. Co..... 90@95%

Seal Presses—
Morrill's No. 1, per doz. \$20.00..... 50%

Pruning Hooks and Shears—See Shears.**Pullers Cork—**

Invincible Cork Puller..... \$21.00

Pullers, Nail—

Cyclops..... 50%

Miller's Falls, No. 3, per doz. \$12.00..... 33&40

Pearson No. 1, Cyclone Spike Puller,
each \$30.00..... 50%

Pelican, # doz. \$9.00..... 40&10%

Seranton, Case Lots:
No. 2 B (large)..... \$5.50

No. 3 B (small)..... \$5.00

Smith & Hemenway Co.:
Diamond B, No. 2, case lots, # doz. \$8.00

Diamond B, No. 3, case lots, # doz. \$5.50

Glans No. 1, # doz. \$18; No. 2, \$15.50;
No. 3, \$15..... 40%

Pulleys—Single Wheel—

Inch..... 2 1/2 3 1/2 4 1/2 5 1/2 6 1/2 7 1/2 8 1/2 9 1/2 10 1/2 11 1/2 12 1/2 13 1/2 14 1/2 15 1/2 16 1/2 17 1/2 18 1/2 19 1/2 20 1/2 21 1/2 22 1/2 23 1/2 24 1/2 25 1/2 26 1/2 27 1/2 28 1/2 29 1/2 30 1/2 31 1/2 32 1/2 33 1/2 34 1/2 35 1/2 36 1/2 37 1/2 38 1/2 39 1/2 40 1/2 41 1/2 42 1/2 43 1/2 44 1/2 45 1/2 46 1/2 47 1/2 48 1/2 49 1/2 50 1/2 51 1/2 52 1/2 53 1/2 54 1/2 55 1/2 56 1/2 57 1/2 58 1/2 59 1/2 60 1/2 61 1/2 62 1/2 63 1/2 64 1/2 65 1/2 66 1/2 67 1/2 68 1/2 69 1/2 70 1/2 71 1/2 72 1/2 73 1/2 74 1/2 75 1/2 76 1/2 77 1/2 78 1/2 79 1/2 80 1/2 81 1/2 82 1/2 83 1/2 84 1/2 85 1/2 86 1/2 87 1/2 88 1/2 89 1/2 90 1/2 91 1/2 92 1/2 93 1/2 94 1/2 95 1/2 96 1/2 97 1/2 98 1/2 99 1/2 100 1/2 101 1/2 102 1/2 103 1/2 104 1/2 105 1/2 106 1/2 107 1/2 108 1/2 109 1/2 110 1/2 111 1/2 112 1/2 113 1/2 114 1/2 115 1/2 116 1/2 117 1/2 118 1/2 119 1/2 120 1/2 121 1/2 122 1/2 123 1/2 124 1/2 125 1/2 126 1/2 127 1/2 128 1/2 129 1/2 130 1/2 131 1/2 132 1/2 133 1/2 134 1/2 135 1/2 136 1/2 137 1/2 138 1/2 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639 1/2 640 1/2 641 1/2 642 1/2 643 1/2 644 1/2 645 1/2 646 1/2 647 1/2 648 1/2 649 1/2 650 1/2 651 1/2 652 1/2 653 1/2 654 1/2 655 1/2 656 1/2 657 1/2 658 1/2 659 1/2 660 1/2 661 1/2 662 1/2 663 1/2 664 1/2 665 1/2 666 1/2 667 1/2 668 1/2 669 1/2 670 1/2 671 1/2 672 1/2 673 1/2 674 1/2 675 1/2 676 1/2 677 1/2 678 1/2 679 1/2 680 1/2 681 1/2 682 1/2 683 1/2 684 1/2 685 1/2 686 1/2 687 1/2 688 1/2 689 1/2 690 1/2 691 1/2 692 1/2 693 1/2 694 1/2 695 1/2 696 1/2 697 1/2 698 1/2 699 1/2 700 1/2 701 1/2 702 1/2 703 1/2 704 1/2 705 1/2 706 1/2 707 1/2 708 1/2 709 1/2 710 1/2 711 1/2 712 1/2 713 1/2 714 1/2 715 1/2 716 1/2 717 1/2 718 1/2 719 1/2 720 1/2 721 1/2 722 1/2 723 1/2 724 1/2 725 1/2 726 1/2 727 1/2 728 1/2 729 1/2 730 1/2 731 1/2 732 1/2 733 1/2 734 1/2 735 1/2 736 1/2 737 1/2 738 1/2 739 1/2 740 1/2 741 1/2 742 1/2 743 1/2 744 1/2 745 1/2 746 1/2 747 1/2 748 1/2 749 1/2 750 1/2 751 1/2 752 1/2 753 1/2 754 1/2 755 1/2 756 1/2 757 1/2 758 1/2 759 1/2 760 1/2 761 1/2 762 1/2 763 1/2 764 1/2 765 1/2 766 1/2 767 1/2 768 1/2 769 1/2 770 1/2 771 1/2 772 1/2 773 1/2 774 1/2 775 1/2 776 1/2 777 1/2 778 1/2 779 1/2 780 1/2 781 1/2 782 1/2 783 1/2 784 1/2 785 1/2 786 1/2 787 1/2 788 1/2 789 1/2 790 1/2 791 1/2 792 1/2 793 1/2 794 1/2 795 1/2 796 1/2 797 1/2 798 1/2 799 1/2 800 1/2 801 1/2 802 1/2 803 1/2 804 1/2 805 1/2 806 1/2 807 1/2 808 1/2 809 1/2 810 1/2 811 1/2 812 1/2 813 1/2 814 1/2 815 1/2 816 1/2 817 1/2 818 1/2 819 1/2 820 1/2 821 1/2 822 1/2 823 1/2 824 1/2 825 1/2 826 1/2 827 1/2 828 1/2 829 1/2 830 1/2 831 1/2 832 1/2 833 1/2 834 1/2 835 1/2 836 1/2 837 1/2 838 1/2 839 1/2 840 1/2 841 1/2 842 1/2 843 1/2 844 1/2 845 1/2 846 1/2 847 1/2 848 1/2 849 1/2 850 1/2 851 1/2 852 1/2 853 1/2 854 1/2 855 1/2 856 1/2 857 1/2 858 1/2 859 1/2 860 1/2 861 1/2 862 1/2 863 1/2 864 1/2 865 1/2 866 1/2 867 1/2 868 1/2 869 1/2 870 1/2 871 1/2 872 1/2 873 1/2 874 1/2 875 1/2 876 1/2 877 1/2 878 1/2 879 1/2 880 1/2 881 1/2 882 1/2 883 1/2 884 1/2 885 1/2 886 1/2 887 1/2 888 1/2 889 1/2 890 1/2 891 1/2 892 1/2 893 1/2 894 1/2 895 1/2 896 1/2 897 1/2 898 1/2 899 1/2 900 1/2 901 1/2 902 1/2 903 1/2 904 1/2 905 1/2 906 1/2 907 1/2 908 1/2 909 1/2 910 1/2 911 1/2 912 1/2 913 1/2 914 1/2 915 1/2 916 1/2 917 1/2 918 1/2 919 1/2 920 1/2 921 1/2 922 1/2 923 1/2 924 1/2 925 1/2 926 1/2 927 1/2 928 1/2 929 1/2 930 1/2 931 1/2 932 1/2 933 1/2 934 1/2 935 1/2 936 1/2 937 1/2 938 1/2 939 1/2 940 1/2 941 1/2 942 1/2 943 1/2 944 1/2 945 1/2 946 1/2 947 1/2 948 1/2 949 1/2 950 1/2 951 1/2 952 1/2 953 1/2 954 1/2 955 1/2 956 1/2 957 1/2 958 1/2 959 1/2 960 1/2 961 1/2 962 1/2 963 1/2 964 1/2 965 1/2 966 1/2 967 1/2 968 1/2 969 1/2 970 1/2 971 1/2 972 1/2 973 1/2 974 1/2 975 1/2 976 1/2 977 1/2 978 1/2 979 1/2 980 1/2 981 1/2 982 1/2 983 1/2 984 1/2 985 1/2 986 1/2 987 1/2 988 1/2 989 1/2 990 1/2 991 1/2 992 1/2 993 1/2 994 1/2 995 1/2 996 1/2 997 1/2 998 1/2 999 1/2 1000 1/2 1001 1/2 1002 1/2 1003 1/2 1004 1/2 1005 1/2 1006 1/2 1007 1/2 1008 1/2 1009 1/2 1010 1/2 1011 1/2 1012 1/2 1013 1/2 1014

Screws—Bench and Hand—

Bench, Iron, doz. 1 in. \$2.50@2.75
 1 1/4, \$3.00@3.25; 1 1/2, \$3.50@3.75
 Bench, Wood, Beech, doz. 30@50¢
 Hand, Wood, doz. 30@50¢
 R. Bliss Mfg. Co., Hand, doz. 30@50¢
 Chapin-Stephens Co., Hand, doz. 30@50¢
 Ohio Tool Co., Bench and Hand, doz. 30@50¢
Coach, Lag and Hand Rail—
 Lag, Common Point, list Oct. 1, '99, 80¢
 Coach and Lag, Gimlet Point, list Oct. 1, '99, 80¢
 Hand Rail, list Jan. 1, '81, 70¢ 10¢ 15¢

Jack Screws—

Standard List, 75¢ 10¢ 80¢ 5¢
 Millers Falls, 50¢ 10¢ 10¢
 Millers Falls, Roller, 50¢ 10¢
 P. S. & W., 50¢ 10¢ 10¢
 Sargent, 70¢ 10¢
 Sweet Iron Works, 75¢ 10¢ 80¢ 5¢

Machine—

List Jan. 1, '98,
 Flat or Round Head, Iron, 50¢ 50¢ 10¢
 Flat or Round Head, Brass, 50¢ 50¢ 10¢

Set and Cap—

Set (Iron or Steel), 70¢ Extra
 Sq. Hd. Cap, 70¢ 10¢
 Hex. Hd. Cap, 70¢ 10¢
 Rd. or Filler Hd. Cap 65¢ given.

Wood—

List July 3, 1903,
 Manufacturers' printed discounts:
 Flat Head, Iron, 87 1/2¢ 10¢ 5¢
 Round Head, Iron, 85¢ 10¢ 5¢
 Flat Head, Brass, 85¢ 10¢ 5¢
 Round Head, Brass, 80¢ 10¢ 5¢
 Flat Head, Bronze, 77 1/2¢ 10¢ 5¢
 Round Head, Bronze, 75¢ 10¢ 5¢
 Drive Screws, 87 1/2¢ 10¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Clipper Pattern, Grass, \$4.25@5.00
 Full Polished Clipper, \$4.75@5.50
 Grain, \$7.00@7.50
 Clipper, Grain, \$7.75@8.25
 Weed and Bush, \$4.50@5.00

Seeders—

Enterprise, Raisin, 95¢ 30¢
Sets— Axl and Tool—
 Brad Axl and Tool Sets:
 Wood Hdl., 10 axls doz., \$2.00@2.25
 Wood Hdl., 14 axls, 6 Tools, doz., \$2.50@2.60

Allen's Sets, Axl and Tools:
 No. 20, 4 doz., \$10.00, 50¢ 10¢ 10¢
 Fray's Adj. Tool & Dis., Nos. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Garden Tool Sets—
 Ft. Madison, Taree, Hoe, Rake and Shovel, 7 doz. sets, \$9.00

Nail—

Square, per gro., \$2.25@2.50
 Round, Bk. and Poi., assorted, per gro., \$1.80@2.00
 Octagon, per gro., \$1.50@1.75
 Buck Brothers, 77 1/2¢
 Cannon's Diamond Point, 77 1/2¢
 Mayhew's, 77 1/2¢
 No. 11's Cannon's Diamond Point, 77 1/2¢
 Snell's Corrugated, Cup Pt., per gro., \$7.20
 Snell's Knurled, Cup Pt., per gro., \$7.20
 Springfield Mach. Screw Co., Diamond Knurled, Cup Pt., per gro., \$7.20

Rivet—

Regular list, 75¢ 75¢ 10¢
Saw—
 Genuine, 50¢ 10¢
 Imitation, 50¢ 10¢
 Atkin's, 40¢
 Adjustable, 40¢
 Bemis & Call Co.'s, 40¢
 Cross Cut, 30¢
 Plate, 20¢
 Diamond Star and Monarch, 35¢
 Morrill's No. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Shaving—
 Fox Shaving Sets, No. 31, per doz., \$24.00 net
Sharpeners, Knife—
 Chicago Wheel & Mfg. Co., 63¢

Shaves, Spoke—
 Iron, doz., \$1.00@1.15
 Wood, doz., \$1.75@2.00
 Bailey's (Stanley R. & L. Co.), 80¢ 30¢ 10¢ 10¢

Chapin-Stephens Co.
 Goodell's, 40¢ 30¢ 10¢ 10¢
 Wood's F1 and F2, 50¢

Shears—
 Cast Iron, 7 8 9 in.
 Best, \$16.00 18.00 20.00 gro.

Tools—Coopers'—

L. & J. White.....30@90&55

Hay—Myers' Hay Tools.....50%
Stowell's Hay Carriers.....50%
Stowell's Hay Forks.....50%
Stowell's Fork Pulleys.....50%**Saw—**Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33%
Simonds' Crescent.....25%**Ship—**

L. & J. White.....25%

Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Ballou, Globe or Acme.....

doz. \$1.15 to 1.25; gro. \$11.50 to 12.00

Harper, Champion or Paragon.....

doz. \$1.25 to 1.40; gro. \$13.00 to 13.50

Game—

Oneida Pattern.....75¢ to 10¢ to 75¢ to 10¢

Newhouse.....45¢ to 55¢

Hawley & Norton.....65¢ to 85¢

Victor (Oneida Pattern).....75¢ to 85¢

O.C. Jump (Blake Pattern) 60¢ to 80¢ to 10¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.....

Mouse, Round or Square Wire.....8 1/2¢ to 9¢

Marty French Rat and Mouse Traps.....

(Genuine): 8 doz. \$12.00

No. 1, Rat, Each \$1.12 1/2; doz. \$8.00

No. 3, Rat, doz. \$8.00; case of 50.....

No. 3 1/2, Rat, doz. \$4.75; case of 75.....

No. 4, Mouse, doz. \$3.50; case of 7.....

No. 5, Mouse, doz. \$3.75; case of 150.....

Trimmers, Spoke—

Wood's E.L.....50%

Trowels—

Dixton Brick and Pointing.....30%

Dixton Plastering.....35%

Dixton "Standard Brand" and Gar-.....

den Trowels.....35%

Kohler's Steel Garden Trowels, 5 in.....

Kohler's Steel Garden Trowels, 6 in.....

Never-Break Steel Garden Trowels.....

Rose Brick and Plastering.....25¢ to 50¢

Woodrough & McParlin, Plastering.....25%

Trucks, Warehouse, &c.—

B. & L. Block Co.....

New York Pattern.....50¢ to 10¢

Western Pattern.....60¢ to 10¢

Handy Trucks.....per doz. \$16.00

Grocery.....per doz. \$15.00

Daisy Stove Trucks, Improved pattern.....

Model Stove Trucks.....\$ doz. \$18.50

Tubs, Wash—No. 1

Galvanized, per tub \$4.75 5.25 6.00

Galvanized Wash Tubs (S. & Co.).....

No. 1 2 3 10 20 30

Per doz., net \$3.70 6.50 7.20 6.50 7.20 8.10

Twine—Miscellaneous—

Flax Twine—BC, B.....

No. 9, 14 and 1/2 lb. Balls.....23¢ to 24¢

No. 12, 14 and 1/2 lb. Balls.....18¢ to 20¢

No. 18, 14 and 1/2 lb. Balls.....16¢ to 18¢

No. 24, 14 and 1/2 lb. Balls.....16¢ to 18¢

No. 36, 14 and 1/2 lb. Balls.....15¢ to 17¢

Chalk Line, Cotton, 1/4 lb.....

Balls.....30¢

Cotton Mops, 6, 9, 12 and 15 lb. to.....

doz.....@11¢

Cotton Wrapping 5 Balls to lb.....

according to quality.....13¢ to 30¢

American 3-Ply Hemp, 1/4 and 1/2 lb.....

Balls.....13¢ to 14¢

American 3 Ply Hemp, 1-lb. Balls..

13¢ to 14¢

India 3-Ply Hemp, 1/4 and 1/2 lb.....

Balls (Spring Twine).....8¢

India 3-Ply Hemp, 1-lb. Balls.....7¢ to 8¢

India 3-Ply Hemp, 1/4 lb. Balls.....6¢ to 7¢

2, 3, 4 and 5-Ply Jute, 1/2 lb. Balls.....

9¢ to 10¢

Mason Line, Linen, 1/2 lb. Balls.....16¢

No. 26 1/2 Mattress, 1/4 and 1/2 lb Balls.....37¢

Wool, 3 to 6 ply.....6 1/2¢ to 6¢

Vices—

Solid Box.....50¢ to 10¢ to 60%

Parallel—

Athol Machine Co.....

Simpson's Adjustable.....40%

Standard.....40%

Amateur.....25%

Columbian Hdw Co.....40%

Emmert Universal.....

Pattern Makers' No. 1, \$15.00; No. 2.....

\$12.50; No. 3, \$10.00.....

Machinist and Tool Makers' No. 4 \$12.50.....

No. 5, \$7.00; No. 6, \$10.00; No. 10.....

\$21.50.....

Jewellers' No. 7.....\$4.00

Fishers' and Norris Double Screw.....15¢ to 10¢

Holland's.....

Machinists'.....40¢ to 50¢

Keystone.....65¢ to 70¢

Lewis Tool Co.....30¢ to 30%

Merrill's.....30%

Miller's Falls.....60¢ to 10¢

Massey Vise Co.'s.....

Climber.....40%

Perfect.....30%

Lightning Grip.....20%

Parker's.....

Victor.....30¢ to 25%

Regular.....30¢ to 25%

Victor's.....40¢ to 45%

Combination Pipe.....55¢ to 60%

Prentiss.....30¢ to 25%

Sargent's.....40%

Smith & Hemenway Co.'s.....

Machinists'.....40%

Jewellers'.....30¢ to 35%

Snedden's K. L.....33 1/2%

Stephens'.....33 1/2%

Saw Filers—

Dixton's D B Clamp and Guide, \$ doz.....

\$30.....25%

Perfection Saw Clamps, \$ doz.....\$5.00

Reading.....60%

Wentworth's Rubber Jaw, Nos. 1, 2.....

and 3.....45¢ to 50¢

Wood Workers—

Massey Vise Co.'s.....

Lightning Grip.....15%

Perfect.....15%

Wyman & Gordon's Quick Action, 6.....

in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.....

Miscellaneous—

Signal & Keeler Combination Pipe.....

Vise.....60¢ to 10¢

Holland's Combination Pipe.....60¢ to 65%

Massey's Quick Action Pipe.....40%

Parker's Combination Pipe.....

87 Series.....80%

187 Series.....80¢ to 85%

No. 870.....40%

Wades—Price Per M.....

B. E., 11 up.....60¢

B. E., 9 and 10.....70¢

B. E., 8.....80¢

B. E., 7.....90¢

P. E., 11 up.....\$1.00

P. E., 9 and 10.....1.25

P. E., 8.....1.50

P. E., 7.....1.50

Ely's B. E., 11 and larger.....\$1.70 to 1.75

Ely's P. E., 12 to 20.....\$3.00 to 3.45

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:

Enameled.....65¢ to 10¢ to 60%

Ground.....60¢ to 10¢ to 65%

Plain or Unground.....65¢ to 10¢ to 70%

Country Hollowware per 100 lbs., \$2 50

White Enameled Ware:

Maslin Kettles.....70%

Covered Ware:

Tinned and Turned.....40%

Enameled.....50%

See also Pots Glue.

Enameled—

Agate Nickel Steel Ware.....50¢ to 20¢

Agate Nickel Steel Ware, Specials.....

60¢ to 15¢

Iron Clad Ware.....70¢ to 10¢

Lava, Enameled.....40¢ to 10¢

Never Break Enameled.....50%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....6 7 8 9

Each.....1.50 2.00 2.50 3.00

Steel Hollow Ware.

Avery Spiders & Griddles.....65¢ to 65¢ to 5¢

Avery Kettles.....60%

Porcelain.....50¢ to 50¢ to 10¢

Never Break Spiders and Griddles.....

65¢ to 5¢

Solid Steel Kettles.....60%

Never Break Kettles.....60%

Solid Steel Spiders & Griddles.....65¢ to 5¢

Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone.....40¢ to 40¢ to 10¢

Washboards—

Solid Zinc.....\$ doz

Crescent, family size, bent frame.....\$3.00

Red Star, family size, stationary.....

protector.....\$3.00

Double Zinc Surface:

Saginaw Globe, family size, station-.....

ary protector.....\$2.65

Cable Cross, family size, stationary.....

protector.....\$2.90

Single Zinc Surface:

Saginaw Globe, open back perfor-.....

ated.....\$2.40

Saginaw Globe, protector, family.....

size, ventilated back.....\$2.25

Brass King, Single Surface, open.....

back.....\$3.00

Nickel Plate Surface:

No. 1001 Nickel Plate, Single Surface.....

\$3.00

Glass Surface:

Glass King, Single Surface, open back, \$3.....

Enamel Surface:

Enamel King, Single Surface, venti-.....

lated back.....\$3.00

Washers—Leather, Axle—

Solid.....80¢ to 10¢ to 80¢ to 10¢

Patent.....90¢ to 90¢ to 5¢

Coil: 1/4 1 1 1/4 1 1/2 1 3/4 1 1/2 per box

1 1/2 1 3/4 1 1/2 1 3/4 1 1/2 1 3/4 1 1/2

Iron or Steel—

Size bolt.....5-16 3/4 1/2 1/2 1/2 1/2

Washers.....\$5.00 4.10 2.80 2.80 2.80 2.80

In lots less than one keg add 1/4¢ per.....

lb., 5-lb. boxes add 1/4¢ to list.

Cast Washers

Over 1/4 inch, barrel lots, per lb.....1 1/4¢ to 2¢

Wedges

Oil Finish.....lb. 2.35 to 2.10

Weight Hitching—

Covert Mfg. Co.....40¢ to 25¢

Covert's Saddlery Works.....60¢ to 10¢

Sash—

Per ton, f.o.b. factory:

Eastern District.....\$23.00

Western, Central and Southern.....

Districts market unsettled,

prices ranging from \$17.50 to \$19.00

Wheels, Well—

8-in., \$1.6¢ to 1.80; 10-in., \$3.00 to \$2.25;

12-in., \$3.45 to \$3.65; 14-in., \$4.00 to \$4.25

Wire and Wire Goods—

Bright and Annealed:

6 to 9.....75¢ to 75¢ to 10¢

10 to 18.....75¢ to 75¢ to 10¢ to 5¢

19 to 26.....75¢ to 10¢ to 80¢ to 5¢

27 to 36.....75¢ to 10¢ to 7 1/2¢ to 80¢ to 2 1/2¢

Galvanized:

6 to 9.....70¢ to 70¢ to 10¢

10 to 18.....70¢ to 70¢ to 10¢

19 to 26.....72 1/2¢ to 72 1/2¢ to 5¢

27 to 36.....70¢ to 70¢ to 5¢

Coppered:

6 to 9.....70¢ to 70¢ to 10¢

10 to 18.....70¢ to 70¢ to 10¢ to 5¢

19 to 26.....72 1/2¢ to 72 1/2¢ to 5¢

27 to 36.....70¢ to 70¢ to 5¢

Tinned:

6 to 11.....72 1/2¢ to 10¢ to 75%

15 to 18.....70¢ to 10¢ to 70¢ to 10¢ to 5¢

19 to 26.....65¢ to 10¢ to 70%

27 to 36.....60¢ to 60¢ to 10%

Annealed, Steel and Tinned, on.....

Spoils.....70¢ to 10¢ to 10¢ to 10%

Brass & Copper on Spoils.....60¢ to 10%

Brass, list Feb. 26, '99.....30%

Copper, list Feb. 26, '99.....15%

Cast Steel Wire.....50%

Wire Clothes Line, see Lines.....

Wire Picture Cord, see Cord.....

Bright Wire Goods—

List June 21, 1903.....90¢ to 10¢ to 90¢ to 10%

Wire Cloth and Netting—

Galvanized Wire Netting.....

80¢ to 10¢ to 80¢ to 10¢ to 5¢

Painted Screen Cloth, per 100 ft. \$1.25.....

Standard Galv. Hardware Grade:

Nos. 2, 3 and 3 Mesh, sq. ft.....3¢

Nos. 4 and 5 Mesh, sq. ft.....3¢

No. 6 Mesh, sq. ft.....3¢

No. 8 Mesh, sq. ft.....3¢

Wire Barb—See Trade Report.

Wrenches—

Agricultural.....75¢ to 10¢ to 75¢ to 10¢ to 5¢

Alligator.....70%

Baxter Pat'n S Wrenches.....

70¢ to 5¢ to 70¢ to 10%

CURRENT METAL PRICES.

AUGUST 31, 1904.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—
Bar Iron from Store—

Refined Iron:	
1 to 1 1/2 in. round and square.....	1.80@1.85
1 1/2 to 4 in. x 1/2 to 1 in.....	2.00
1 1/2 to 4 in. x 3/4 to 5-16.....	2.00
Rods—3/4 and 1-1/2 round and square.....	2.00
Angles:	
3 in. x 1/4 in. and larger.....	2.15
3 in. x 3/4 in. and 1/2 in.....	2.25
1 1/2 to 2 1/2 in. x 1/2 in.....	2.05
1 1/2 to 2 1/2 in. x 3/4 in. and thicker.....	2.05
1 to 1 1/2 in. x 3/4 in.....	2.10
1 to 1 1/2 in. x 1/2 in.....	2.25
3/4 x 1/2 in.....	2.35
3/4 x 3/4 in.....	3.40
3/4 x 3/8 in.....	3.90
Beams:	
1 in.....	2.45
1 1/2 in.....	2.25
1 1/2 to 2 1/2 in.....	2.15
3 in. and larger.....	2.40
Channels, 9 in. and larger.....	2.30
Bands—1 1/2 to 6 x 3-16 to No. 8.....	2.10
Burden's "Best" Iron, base price.....	3.05
Burden's "H. B. & S. Iron, base price.....	2.85
"Plater".....	3.10
Norway Bars.....	3.25@3.75
Norway Shapes.....	3.75@4.25

Merchant Steel from Store—

Bessemer Machinery.....	1.85
Toe Calk, Tire and Sleigh Shoe.....	2.00@2.50
Best Cast Steel, base price in small lots.....	7

Soft Steel Sheets—

1/4 inch.....	2.30	No. 14.....	2.45
3-16 inch.....	2.30	No. 16.....	2.55
No. 8.....	2.30	No. 18.....	2.65
No. 10.....	2.35	No. 20.....	2.65
No. 12.....	2.40	No. 22.....	2.70

Sheet Iron from Store.

Black.

	One Pass, C. R.	R. G.
	Soft Steel	Cleaned
No. 14.....	2.30	2.40
No. 16.....	2.35	2.50
Nos. 18 to 21.....	2.40	2.60
Nos. 22 to 24.....	2.50	2.70
Nos. 25 and 26.....	2.55	2.80
No. 27.....	2.60	2.90
No. 28.....	2.70	3.00

Russia, Planished, &c.

Genuine Russia, according to assortment.....	1 1/4@1 1/2
Patent Planished.....	A, 10; B, 9, net

Galvanized.

Nos. 14 to 16.....	2.70
Nos. 18 to 20.....	2.90
Nos. 22 to 24.....	3.10
No. 26.....	3.30
No. 27.....	3.55
No. 28.....	3.80
No. 30.....	4.70
No. 30 and lighter, 36 inches wide, 35 higher.	

Foreign Steel from Store—

Best Cast.....	15
Extra Cast.....	18
Swaged, Cast.....	16
Best Double Sheet.....	15
Blister, 1st quality.....	13
German Steel, Best.....	10
2d quality.....	8
3d quality.....	8
Sheet Cast Steel, 1st quality.....	15
2d quality.....	14
3d quality.....	12
R. Munster's "Special".....	46
"Titanic".....	19
Hobson's Choice XX Extra Best.....	35
Jessop Self Hardening.....	45
Seamans' "Nelson" Steel.....	40
Hobson's "Soho" Special Self-Hardening.....	43

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banco, Pigs.....	28 @28 1/2
Straits, Pigs.....	27 1/2@28
Straits in Bars.....	28 1/2@29

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20.....	5.20
IX, 14 x 20.....	7.70
Melvin Grade:	
IC, 14 x 20.....	5.70
IX, 14 x 20.....	6.95
Allaway Grade:	
IC, 14 x 20.....	4.95
IX, 14 x 20.....	6.05

American Coke Plates—Bessemer—

IC, 14 x 20.....	108
IX, 14 x 20.....	84.05
IX, 14 x 20.....	85.05

American Terne Plates—

IC, 20 x 28.....	88.00
IX, 20 x 28.....	81.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free. Manufactured, 2 1/2¢ per lb.

Ingot—

Lake.....	13 1/4@13 1/2
Casting.....	13 1/2@13 3/4

Sheet and Bolt—

October 23, 1903.

Net

Prices, in cents per pound.

Sheet 30 x 60.

	Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	30 oz. to 64 oz., 25 to 50 lb.	24 oz. to 30 oz., 18 1/2 to 25 lb.	16 oz. to 24 oz., 12 1/2 to 18 1/2 lb.	14 oz. and 15 lb., 11 to 12 1/2 lb.	12 oz. and 13 oz., 9 1/2 to 11 lb.	10 oz. and 11 oz., 7 1/2 to 9 1/2 lb.	8 oz. and 9 oz., 6 1/2 to 7 1/2 lb.	Lighter than 8 oz.
1 in.	72	18	19	19	20	21	22	23	24	25	26	28
30	72	18	19	19	20	21	22	23	24	25	26	28
36	72	18	19	19	20	21	22	23	24	25	26	28
36	72	18	19	19	20	21	22	23	24	25	26	28
36	120	18	19	19	20	21	22	23	24	25	26	28
36	120	18	19	19	20	21	22	23	24	25	26	28
48	72	18	19	19	20	21	22	23	24	25	26	28
48	72	18	19	19	20	21	22	23	24	25	26	28
48	120	18	19	19	20	21	22	23	24	25	26	28
48	120	18	19	19	20	21	22	23	24	25	26	28
60	72	18	19	19	20	21	22	23	24	25	26	28
60	72	18	19	19	20	21	22	23	24	25	26	28
60	120	18	19	19	20	21	22	23	24	25	26	28
60	120	18	19	19	20	21	22	23	24	25	26	28
72	72	18	19	19	20	21	22	23	24	25	26	28
72	120	18	19	19	20	21	22	23	24	25	26	28
72	120	18	19	19	20	21	22	23	24	25	26	28
108	72	18	19	19	20	21	22	23	24	25	26	28
108	120	18	19	19	20	21	22	23	24	25	26	28
132	72	18	19	19	20	21	22	23	24	25	26	28
132	120	18	19	19	20	21	22	23	24	25	26	28

Circles, Segments and Pattern Sheets, 3¢ per lb advance over price of sheet copper required to cut them from. Cold or Hard Rolled Copper 14 oz. square foot and heavier, 1¢ per lb over the foregoing prices. Cold or Hard Rolled Copper, lighter than 14 oz. square foot, 2¢ per lb over the foregoing prices. All Polished Copper, 20 in. wide and under, 1¢ per lb advance over the price for Cold Rolled Copper. All Polished Copper, over 20 in. wide, 2¢ per lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ per lb more than Polished Copper.

Copper Bottoms, Pits and Flats—14 oz. to square foot and heavier, 1¢ per lb advance over price of sheet copper required to cut them from. 12 oz. and up to 14 oz. to square foot, 1¢ per lb advance over price of sheet copper required to cut them from. 10 oz. and up to 12 oz. to square foot, 2¢ per lb advance over price of sheet copper required to cut them from. Lighter than 10 oz. to square foot, 2¢ per lb advance over price of sheet copper required to cut them from. Circles less than 8 in. diameter, 2¢ per lb additional. Circles over 8 in. diameter are not classed as Copper Bottoms.

Polished Copper Bottoms and Flats, 1¢ per lb extra.

Copper Wire—

Hard and Soft Drawn—8 & S. Gauge.

List Feb. 23, 1901.

	8 and 10	11 and 12
Nos. 0000 to 5.....	Base	1/2¢ per lb adv.
Nos. 13.....	14	15
Nos. 16.....	16	17
Nos. 19.....	18	19
Nos. 22.....	20	21
Nos. 25.....	22	23
Nos. 28.....	24	25
Nos. 31.....	26	27
Nos. 34.....	28	29
Nos. 37.....	30	31
Nos. 40.....	32	33
Nos. 43.....	34	35
Nos. 46.....	36	37
Nos. 49.....	38	39
Nos. 52.....	40	41
Nos. 55.....	42	43
Nos. 58.....	44	45
Nos. 61.....	46	47
Nos. 64.....	48	49
Nos. 67.....	50	51
Nos. 70.....	52	53
Nos. 73.....	54	55
Nos. 76.....	56	57
Nos. 79.....	58	59
Nos. 82.....	60	61
Nos. 85.....	62	63
Nos. 88.....	64	65
Nos. 91.....	66	67
Nos. 94.....	68	69
Nos. 97.....	70	71
Nos. 100.....	72	73

Seamless Brass Tubes—

Standard always Stub's gauge, unless otherwise ordered.

Feb. 19, 1904.

	Stub's W.G.	R. & S. W.G.	1/4	5-16	7-16	9-16	1/2	3/4	1	1 1/4	1 1/2
4-11	3-9	10	11	12	13	14	15	16	17	18	19
11	10	11	12	13	14	15	16	17	18	19	20
12	11	12	13	14	15	16	17	18	19	20	21
13	12	13	14	15	16	17	18	19	20	21	22
14	13	14	15	16	17	18	19	20	21	22	23
15	14	15	16	17	18	19	20	21	22	23	24
16	15	16	17	18	19	20	21	22	23	24	25
17	16	17	18	19	20	21	22	23	24	25	26
18	17	18	19	20	21	22	23	24	25	26	27
19	18	19	20	21	22	23	24	25	26	27	28
20	19	20	21	22	23	24	25	26	27	28	29
21	20	21	22	23	24	25	26	27	28	29	30
22	21	22	23	24	25	26	27	28	29	30	31
23	22	23	24	25	26	27	28	29	30	31	32
24	23	24	25	26	27	28	29	30	31	32	33
25	24	25	26	27	28	29	30	31	32	33	34

Copper Bronze and Gilding Tube, 3¢ per lb additional.

Iron Pipe Sizes—Brass

1 1/4 1 1/2 1 3/4 2 2 1/2 3 3 1/2 4 4 1/2 5 6 inch

30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100

Copper, Bronze or Gilding Tubes, 3¢ per lb additional.

Braze Brass Tubing.

(To No. 10, inclusive.) June 6, 1893.

Brown & Sharpe's gauge standard.

	Plain Round Tube, 1/4 in. up to 3 in.	Per lb.
1/4 in. to 3 in. in. d., to No. 10, inclusive.....	38	
3 in. to 3 1/2 in. in. d., to No. 10, inclusive.....	40	
Over 3 1/2 in. to 3 3/4 in. in. d., to No. 10, inclusive.....	45	
Over 3 3/4 in. to 3 1/2 in. in. d., to No. 10, inclusive.....	50	
Braze and Copper, advance on Brass List, 3 cents.		
Discount from list.....	25	
Roll and Sheet Brass—		
(Brown & Sharpe Standard Gauge.)		
Common High Brass:		
Wider than	12	13
and including	14	15
To No. 20 inclusive.....	22	23
Nos. 21, 22, 23 and 24.....	24	25
Nos. 25 and 26.....	26	27
Nos. 27 and 28.....	28	29
Nos. 29 and 30.....	30	31
Nos. 31 and 32.....	32	33
Nos. 33 and 34.....	34	35
Nos. 35 and 36.....	36	37
Nos. 37 and 38.....	38	39
Nos. 39 and 40.....	40	41
Nos. 41 and 42.....	42	43
Nos. 43 and 44.....	44	45
Nos. 45 and 46.....	46	47
Nos. 47 and 48.....	48	49
Nos. 49 and 50.....	50	51
Nos. 51 and 52.....	52	53
Nos. 53 and 54.....	54	55
Nos. 55 and 56.....	56	57
Nos. 57 and 58.....	58	59
Nos. 59 and 60.....	60	61
Nos. 61 and 62.....	62	63
Nos. 63 and 64.....	64	65
Nos. 65 and 66.....	66	67
Nos. 67 and 68.....	68	69
Nos. 69 and 70.....	70	71
Nos. 71 and 72.....	72	73
Nos. 73 and 74.....	74	75
Nos. 75 and 76.....	76	77
Nos. 77 and 78.....	78	79
Nos. 79 and 80.....	80	81
Nos. 81 and 82.....	82	83
Nos. 83 and 84.....	84	85
Nos. 85 and 86.....	86	87
Nos. 87 and 88.....	88	89
Nos. 89 and 90.....	90	91
Nos. 91 and 92.....	92	93
Nos. 93 and 94.....	94	95
Nos. 95 and 96.....	96	97
Nos. 97 and 98.....	98	99
Nos. 99 and 100.....	100	101

Common High Brass.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	26	28	30	32	34	36	38	40
and including	28	30	32	34	36	38	40	
To No. 30, inclusive ..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24 ..	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26 .....	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28 .....	.42	.45	.49	.53	.58	.65	.75	